WNP-2 SIMULATOR CERTIFICATION
NRC FORM 474 SUPPORTING DOCUMENTATION

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1. INTRODUCTION

This report is submitted in accordance with Title 10, Code of Federal Regulations, part 55.45 and Regulatory Guide 1.149. The report provides the information prescribed by Appendix A of the American National Standards Institute/American Nuclear Society Standard, ANSI/ANS-3.5 (1985), "Nuclear Power Plant Simulators for Use in Operator Training". Its purpose is to provide supporting documentation to substantiate our submittal of NRC Form 474 "Simulation Facility Certification" for the Washington Public Power Supply System's (Supply System) Nuclear Plant No.2 (WNP-2) Operator Training Simulator.

1.1 Certification Approach

This certification submittal documents the performance of the simulator now in use at the Supply System. This facility is a plant-referenced simulator which has been effective in meeting near-term training objectives and in supporting operator licensing examinations. To meet it's long-term need to enhance operator training and to more effectively comply with current standards, the Supply System has determined to replace the existing simulator. The new or "replacement" simulator, now under construction, was specified and designed to meet all known and anticipated requirements. Its design documentation and configuration control system will also permit the Supply System to maintain its fidelity to changes in the reference plant.

The Supply System has recognized that its simulator has some limitations in its fidelity to the reference plant. These differences are delineated in this submittal. The Supply System has assessed the impacts of these differences in meeting its training objectives and examinations requirements. This has resulted in a continuing program of upgrades for differences that affect the value of training. The Supply System has also used compensatory training to augment its simulator training and used alternate functions (i.e. device overrides) within the simulator's capabilities to achieve required examination scenarios.

The differences in correlation between the simulator and reference plant were determined to be of two categories:

1. Exceptions to the ANSI/ANS-3.5 (1985) Standard - these differences are founded in the limited physical scope of the simulator hardware and the range of simulated system operation. Exceptions that affect training are to be reconciled by the expanded scope of the new simulator. Near-term training plans have accommodated these exceptions and minimized any impacts to an acceptable level.

2. Upgrades and Corrections - these differences represent all exceptions for which priority has been established to correct the identified discrepancies. The criterion for this category is that the exception requires correction to meet training or examination plans using this simulator. These discrepancies are planned for correction consistent with the requirements of 10 CFR 55.45 (b)(4)(i).

It is the Supply System's intent to provide a full set of certification documentation with its certification of the new simulator. Since the new simulator will fully replace the current simulator it will be a new facility and certified accordingly. The simulator is expected to be replaced during an appropriate transition period in late 1993 or early 1994.

1.2 Simulator Application

The training program administrative procedures and technical support procedures are intended to ensure that licensee examinations and associated training are fully compliant with 10 CFR 55.45 requirements and associated guidelines. The scope, design, and operation of the simulator are for the specific support of the training tasks used on the WNP-2 simulator for license operator training and testing.

Simulator training is structured around scenarios that include clearly defined learning objectives based on job task analysis. Training material based on those requirements are systematically compared to plant modifications, Licensee Event Reports, Significant Operating Experience Reports and changes to procedures.

The simulator's performance during recent operator examinations indicates no major flaws in its support of its mission. The Supply System's continued resolution of identified problems and planning for its use to achieve training and examination scenarios as required has made the simulator an effective tool.

The new simulator is intended to fully meet all known or anticipated requirements as well as substantiate the Supply System's commitment to quality training. It is the Supply System's intent to fully support its training program by making the most effective use of its current simulator while preparing to provide the extensive additional capabilities afforded by its new simulator.

2. BACKGROUND

This section is provided to create an understanding of the Supply System's efforts to provide high-quality simulator performance to meet both its near-term as well as long-term Licensed Operator Training Program requirements.

2.1 History

The original simulator for the Supply System's WNP-2 nuclear plant was contracted in September 1980 when the Nuclear Regulatory Commission (NRC) did not require plant specific training simulators. In April 1981, the NRC issued Regulatory Guide 1.149[2], which endorsed ANSI/ ANS 3.5. This standard placed full responsibility for verifying simulator acceptability on simulator owners.

The Supply System took delivery of the WNP-2 simulator in 1983, after the vendor's contract was terminated. No acceptance test or baseline test was performed. The design basis was not well-documented or was not provided. Numerous features were known to be inoperative and the simulator as delivered did not reflect recent changes in the plant's design. Supply System management decided to upgrade the simulator software and hardware and correct deficiencies using in-house staff. Concurrent to its upgrade/retrofit, the simulator was pressed into service for training, significantly complicating the Supply System's ability to perform the required upgrades.

The increasing requirements for simulator fidelity and sophistication, coupled with ongoing use of the current simulator for training, put certification of the current Supply System simulator in question. During the summer of 1988, representatives of the Institute of Nuclear Power Operations indicated that the WNP-2 simulator had modeling and fidelity problems that reduced its training effectiveness. These included:

- Several equipment differences between the plant and simulator equipment.
- Some conflicting indications between simulated systems.
- Unrealistic transient responses under many conditions.
- Significant problems with core, thermal-hydraulic, and feedwater/condensate models.

During NRC Senior Reactor Operator licensing examinations conducted on the WNP-2 simulator during the fall of 1988; several problems were noted:

"The simulator continues to display fidelity problems to the extent that comprehensive NRC operating examinations cannot be administered without a thorough prevalidation of the intended scenario malfunctions and evolutions."

The Supply System's evaluation recognized the full scope of the deficiencies and the effort required to meet the current and expected future levels of required performance. The simulator's plant model software, development tools, instructor interface and configuration control were assessed. It was found that: more hardware simulation was necessary to fully address the instrumentation observed by the licensed operators, the simulation models needed significant enhancement to expand the scope of training into the Emergency Operating Procedures, software documentation needed updating, deficiencies in documentation of design data and the backlog of plant changes as well as the conduct of performance tests were required. Because of these concerns about the simulator as a training and examining tool, the Supply System initiated action to provide a simulator that could be certified to fully meet regulatory requirements.

2.2 Replacement Simulator Procurement

The Supply System considered two alternatives to meeting simulator requirements:

Alternative 1 - Factory construction of a new simulator. In this alternative, we would elect to build a new, state-of-the-art simulator. The current simulator would then be replaced when the new one was complete. All testing to validate, verify and certify the new simulator would be completed at the vendor's facility prior to its installation.

Alternative 2 - Upgrade the current simulator for full certification. The existing panels, instrumentation and I/O hardware would be retained with new software and panels added to the machine. The backlog of plant changes would be incorporated in the simulator. A new computer architecture would be established and configuration control would be brought up to the level of the requirements.

Factors that affected our decision included:

Lost Training Time - A new simulator would allow a minimum amount of disruption to training classes and examinations being conducted in the present facility. To reduce an upgrade's impact, work would be performed on off shifts. However, major panel modification would cause unavoidable conflicts.

Schedule - The constraints of access to the current machine compared with completion of a new simulator, yielded a schedule differential of less than six months. It was uncertain that either alternative could be completed by the May 1991 certification deadline.

Additional Hardware - Upgrading the present simulator would require new or additional computers to handle modern software, a new process computer, other costly instrumentation changes in the plant control room, and the addition of panels not within the current simulator's scope.

Cost - A new simulator was the more costly alternative. It was difficult to assess the indirect costs of performing an upgrade to the simulator including, lost training time, detailed project management requirements, and the availability cost of qualified contractors.

Configuration Management - Over the years, only limited documentation was prepared for simulator hardware and software modifications. The upgrade of design documentation and preparation and conduct of performance tests was expected to be equal or greater than that required for design of a new simulator.

Risk - The risk to the Supply System was considered to be greater for the upgrade alternative. Procurement of a new simulator would allow the Supply System, via the contract, to share the risk of schedules and certification. A new, state-of-the-art simulator was also expected to exceed the minimum functional and fidelity requirements.

Thus in the summer of 1988, Supply System management chose to replace the current simulator. The risk to the Supply System's Licenced Operator Training Program was the driving factor. The need to train operators and conduct examinations would continue during a major upgrade, jeopardizing both programs.

The NRC was advised of the Supply System's plans to replace the existing WNP-2 simulator with a new simulator by summer 1991 to meet regulatory requirements. The commission agreed that our plan was an adequate long-term solution. The Supply System also presented its intentions to perform limited upgrades to the existing simulator to address major fidelity problems for near-term training.

2.3 Simulator Upgrades 1988 - 1990

Without other action, the conditions that led to the decision to replace the WNP-2 simulator would continue to affect the quality of our training program until receipt of the new simulator. Because of the need to use the current simulator for continued training, the Supply System elected to provide incremental improvement to better support abnormal conditions and emergency operating procedures training.

In 1988 the operational fidelity of the current simulator was sufficient to support most of the normal operating procedures during startup, power maneuvering and shutdown. In addition, many of the operating procedures for off-normal conditions resulting from equipment malfunctions could be simulated. However, emergency operating procedures used under accident conditions were not effectively supported by the existing simulator. Those accident conditions frequently required instructor intervention which is detrimental to operator training and testing. Accidents that could not be run without instructor intervention included loss of coolant, loss of core flow, loss of normal feedwater, and ATWS.

With the decision to procure a new simulator, the Supply System initiated a review of the present simulator's deficiencies. In parallel with this more detailed assessment, the Supply System's Training department reviewed the simulator's deficiencies to identify the improvements required to meet training needs over the expected remaining life of the simulator.

The Nuclear License Training Department's assessment looked at the current and planned training sessions and its then current set of simulator problem reports. Plant modifications that had an important impact on training were assessed from a cost/benefit point-of-view. The assessment resulted in a prioritized set of limited upgrades to the current simulator. For the simulator models, the boiler model would be replaced and the condensate and feedwater, main steam and primary containment models would first be modified (upgraded). Other plant system models that interfaced with these key models would also require some improvements. These included such systems as the feedwater heaters, turbines and recirculation systems. The Training department's assessment also recommended that the plant process computer display system, a key control room feature, be incorporated into the simulator.

The Supply System presented its intent to make improvements to the current simulator to the NRC in December 1988. The detailed assessment that established the scope and priorities for the limited upgrades was performed in the first quarter of 1989. The goal was to complete and test improvements to the simulator in time to support annual operator requalifications examinations scheduled for February 1990.

Work plans were separated into three phases: the first phase, discussed above, was the assessment of the scope of limited upgrades that could reasonably be performed. The second phase was to develop a new boiler model and to upgrade the main steam header model including steam flow calculations (from the vessel), condensate and feedwater hydraulics model, and the containment model. Work also began to install the new plant process computer and displays in the simulator. These activities were completed in mid-summer 1989. The remaining work and third phase of the improvements were installing the new boiler model and revising and refining the major models that interface with the new boiler model.

Model integration testing commenced in late November 1989. This checkout of the limited upgrades focused on the simulator's ability to perform normal evolutions and selected transient conditions directly in support of planned examination scenarios. Integration testing of the models and the simulator plant computer display system continued to mid January 1990. During this time significant improvements were made to the simulator's performance and on January 25th 1990, a new training set was established for the license examination.

2.4 Plans

Following the program of upgrades, the Supply System's focus since January 1990 has been to direct its support of the current simulator to the conduct of the Licensed Operator Training Program. Ongoing upgrades and improvement to the simulator's performance have been to support the conduct of training sessions and evaluations. This focus is to allow the most effective use of the simulator over its remaining useful life.

The simulator is expected to be replaced by the new simulator during a change over period in late 1993 or early 1994. The new simulator, on receipt, will have a backlog of plant changes to implement. We are currently assessing the level of changes to implement prior to pressing the new simulator fully into service. One option being considered will be to operate both simulators simultaneously for a period of several months. This will avoid any schedule conflicts and allow better access for Supply System staff to perform upgrades. The certification submittal for the new simulator will be provided when the Supply System declares it "ready for training" and puts the simulator into service. Planned upgrades will be fully documented as part of the certification submittal.

3.0 SIMULATOR INFORMATION

This section of the WNP-2 Simulator Certification provides general information about the WNP-2 simulator and reference plant, summarizes the comparison made between the simulator and reference plant's physical attributes, instrumentation, and environment and discusses the available instructor interface features. The use of the reference plant's operating procedures in the simulator is also addressed.

3.1 General Information

The following general information is provided as reference and for familiarization with the WNP-2 simulator:

3.1.1 Owner/Operator/Manufacturer

The WNP-2 simulator is owned and operated by the Washington Public Power Supply System, a municipal corporation and joint operating agency of the State of Washington. The simulator is located at the Supply System's Plant Support Facility, approximately one mile from the reference plant. The Supply System address is:

Washington Public Power Supply System
P.O. Box 968
3000 George Washington Way
Richland, WA 99352-0968

The WNP-2 simulator was originally manufactured by Gould Simulation Systems Division of Melville, Long Island, New York.

3.1.2 Reference Plant/Type/Rating

The WNP-2 power generating station (plant) is the designated reference plant for the WNP-2 operator training simulator. WNP-2 is a 1145 MWe/3323 MWt General Electric boiling water reactor (BWR-5) with a Mark II containment. WNP-2 began commercial operations in December 1984.

3.1.3 Date Available For Training

The simulator was available for operator training in September 1983.

3.1.4 Type of Certification Report

This is the initial Simulator Certification Report for the WNP-2 simulator, which is a plant-specific simulator for the WNP-2 power generating station.

3.2 Control Room Physical Fidelity

The WNP-2 simulator consists of a full scale replica of significant portions of the WNP-2 plant's main control room with front panel devices fully functional. This replica is driven by a computer complex such that the visual/audible characteristics of the plant control room are reproduced for a given operating condition. The physical scope of the plant-referenced simulator was reviewed in accordance with Section 3.2 of ANSI/ANS 3.5 - 1985.

3.2.1 Control Room Physical Arrangement

The physical location of simulated panels as well as other control room equipment (e.g. desks and cabinets) was compared to the WNP-2 control room as part of this assessment. The identification of simulated panels is shown in Appendix A, Figure A-1, "Gould Simulator Scope".

For comparison, Figure A-2, "Westinghouse Simulator Scope" in Appendix A, depicts the full range of simulator scope that will be included in the replacement simulator. Both figures also provide equipment lists which identify major panels and items on panels included in each simulator's respective scope of simulation.

The existing simulator has for those panels in its current scope retained a one-to-one relationship except as noted in the exceptions per Section 6 of this report. Those control room panels included in the simulator scope have been compared to the plant control room and an evaluation performed for training impact based on normal plant evolutions and for responding to malfunctions listed in ANSI/ANS 3.5 Section 3.1.2.

Panels not included in the simulator were evaluated for impact to training. It is recognized that the physical scope of the simulator does not include all control room back panels. The area of back panel simulation required to support operator training relative to the use of all plant procedures as well as the trainees' ability to monitor all of the controls within the area of operator responsibility was addressed as part of this assessment.

3.2.2 Panels and Equipment

Physical fidelity of the controls and simulated panels per ANSI/ANS 3.5 Section 3.2.2 has been verified against current photographs taken in March, 1992 of actual panels in the WNP-2 control room. Attachment B-4 of Appendix B summarizes the results of the comparison of the controls on panels in the simulator and the reference plant. Design changes which physically affect the simulator have been identified in an ongoing process where changes which affect simulated panels and controls are classified as to their training impact. Differences between the simulator and the reference plant are cataloged, entered and tracked in the simulator's configuration management system.

3.2.3 Simulator Control Room Environment

The verification of the simulator's fidelity to the WNP-2 control room included a comparison of the physical environment. The environment compared includes color, console arrangement, physical furnishings, lighting as well as the audible background. Figure A-3 in Appendix A shows the physical location of the simulated panels. Attachment B-5 summarizes the results of the comparison of the simulator's to the reference plant control room environment. Deficiencies in the category are assessed in the same manner for training impact.

3.2.4 Systems

The simulator provides a simulated system scope consistent with the scope of the panels and controls included in the simulator. Certain systems which would, by plant procedure, be observed and/or controlled by plant operators are not simulated or are simulated partially due to the limitations of simulated panels or controls. Simulator performance testing has identified discrepancies in simulated systems responses which are included as either changes to be performed or exceptions.

3.3 Instructor Control Features

The WNP-2 instructor interface consists of instructor control and monitoring equipment located in an elevated station overlooking the simulator floor. The room permits viewing of the main simulator control area through tinted windows. Observation is further enhanced by use of audio/video equipment which provides the capability to record activities at the panels. The current instructor station has a full set of features summarized as follows:

3.3.1 Initial Conditions

This simulator can support fifty (50) initial conditions or "snapshots" of plant conditions. Twenty (20) initial conditions (IC's) are reserved for training use and are password protected. An additional 18 IC's are for general use and 12 IC's are for use with the "backtrack" feature. The IC's include a variety of operating conditions and fission product poison concentrations. Attachment C-1 of Appendix C is a list of the current IC's used in the simulator.

3.3.2 Malfunctions

Forty (40) malfunctions may be "active" or available for use in the simulator at any given time. Where operator actions are a function of the degree of severity of the malfunction, the malfunction has adjustable values and ascent times to final value of such a range to represent the plant malfunction condition. Malfunctions may be activated as groups or individually. They can be activated by remote device, time delay trigger, console keyboard or by a combination of simulator events called a Boolean trigger. These alternate approaches to initiate malfunctions effectively eliminate any cues to trainees that a malfunction has been introduced into the simulation. All malfunctions are easily inserted, controlled, and removed using the available instructor station functions.

3.3.3 Items Outside the Control Room

The simulator provides realism as required for training in selected operator interfaces to systems and components outside the control room. The simulator includes a communications system which allows instructors to communicate with trainees just as control room operators would communicate with equipment operators using telephones, radios and the PAX. The simulator also includes a remote shutdown panel, located separately from the simulator. There are 335 remote operator actions available via the instructor station console. These "Local Operator Actions" are listed as Attachment C-2 of Appendix C.

3.3.4 Additional Special Instructor/Training Features

The WNP-2 simulator includes capabilities to freeze simulation, run simulation in slower than real time, fast time, and backtrack. The "fast" function can be used to change the rate of xenon buildup or turbine warm-up by a factor from 1 to 10 times real time. Parameters identified for performance testing are obtainable in hard copy either as plots or printouts. Plots are available through either the Simulator Performance Verification System at a resolution of up to model calculation rates or from a strip chart recorder. The instructor station also has the capability of

alerting the instructor when an evolution has proceeded beyond the design limits of the plant. Selected parameters are monitored and when simulator operating limits are exceeded a message is provided to the instructor. The simulator instructor has additional features available including audio/video recording and other controls to assist the conduct of training and evaluation sessions.

3.4 Operating Procedures for Reference Plant

The procedures used in the simulator are controlled copies of the WNP-2 reference plant procedures. All procedures and reference documentation in the simulator control room is maintained at the same revision level as available in the reference plant control room. Simulator certification tests have been conducted using current revisions of procedures. Documentation in the simulator also includes all top tier (blue line) plant drawings and all plant drawings on aperture (microfilm) cards. Revisions which include reference plant modifications are accounted for by License Training instructors in the conduct of planned training or evaluation scenarios.

4. SIMULATOR DESIGN DATA

The simulator's design configuration and performance are correlated to the reference plant control room's configuration and the plant's performance. The simulator's design is controlled, documented, and maintained in accordance with ANSI/ANS-3.5 (1985). This information is available via the simulator's Configuration Management System (CMS).

4.1 Design Basis

Information used as the basis for the simulator's design includes the WNP-2 plant design documentation and simulator design documentation.

Reference plant design documentation includes all drawings, reports, manuals, calculations, test data and operating records which describe the reference plant configuration and performance. These documents are controlled by the plant.

Simulator design documentation reflects the configuration of the simulator. This documentation includes computer software and model documentation, simulator hardware and physical configuration information, updated design data, and completed changes to the simulator.

4.2 Update Information

Update information are changes to the plant configuration that are reviewed for applicability to the simulator. When changes occur in the plant configuration, they must be reviewed for impact on simulator training. Simulator modifications in process are also tracked.

At the time of this submittal, all plant modifications completed through April 1, 1992 have been input into the design change process and assessed for potential training impact.

The simulator's design basis is established, maintained, and tracked by use of the simulator's configuration management system (CMS). Design basis and update/status information is available through the CMS system. Documents identified in the CMS are available in hardcopy.

4.3 Simulator Discrepancy Resolution and Upgrading

The simulator has been maintained, since its delivery, on a basis of evaluating plant change packages, making a determination of a change's effect on the conduct of training, incorporating changes where appropriate, then maintaining this change in the simulator's scope. Information

about planned or implemented engineering changes to the plant are subjected to review using established criteria and processes. Required modifications to the simulator are documented as Change Requests (CR's) and are used as the basis for all simulator updates and modification. Other sources that may result in simulator Change Requests include feedback from students and instructors, certification testing, malfunction testing and other information such as industry events.

Outstanding CR's are prioritized and assigned for resolution. Completed CR's are checked and validated, by testing. Each is initiated and processed through analysis, implementation and validation by established instructions.

In 1988, when the Supply System made its determination to replace its simulator, there was a significant backlog of outstanding Change Requests, reflecting both plant modifications and deficiencies identified from the simulator's use. The upgrades made to the simulator in 1989, as described in Section 2.3 of this report, addressed many of the simulator's most serious performance shortcomings.

Following the decision to procure a new simulator, outstanding deficiencies requiring increases in the physical scope of simulation, major capital investment or added computational capacity were deferred. All simulator affecting plant modifications and outstanding CR's affecting the simulator, whether active or deferred, continue to be tracked and were reviewed as part of this certification.

The testing and validation program conducted in accordance with the simulator's certification also identified additional discrepancies. These discrepancies have been either corrected and retested via the CR process in advance of this submittal or are represented by outstanding CR's.

As indicated above, as part of this certification, the Supply System has brought its review of the effect of plant changes on the current simulator up-to-date. All outstanding CR's have also been reviewed, reassessed for resolution priority and are automatically tracked in the simulator configuration management system. The disposition of the identified set of discrepancies is discussed in Section 5 of this report which addresses compliance to the applicable requirements.

5. PERFORMANCE VERIFICATION

The entire set of tests described in this section were performed for this initial certification. The simulator performance tests are divided into four recommended categories in Appendix A of ANSI/ANS-3.5 (1985). This suggested format is followed with a further sub-division in the second of the categories:

(1) Computer Real-Time Verification
(2) Steady State and Normal Operations
    a) Normal Plant Evolutions
    b) Steady State Operation
(3) Transient Performance
(4) Plant Malfunctions

The range of malfunctions currently used for training were also tested as part of this certification. These additional tests are presented to substantiate the simulator's performance where it is used. These additional tests also demonstrate the Supply System's understanding of the current simulator's limitations and the effective use, including compensatory training where necessary, of the current simulator's capabilities.

5.1 Simulator Tests

The performance tests conducted for certification were developed to address the specific requirements of ANSI/ANS-3.5 (1985). To assure that the tests provided adequate coverage of the requirements, a cross reference between the tests and requirements was prepared. This cross-index is provided in Appendix C, Attachment C-1. As noted in Section 5.2, additional malfunction tests were exercised to validate the malfunctions used by License Training to support training and evaluation scenarios.

Operational Review Summaries have been prepared for each of the tests conducted for this certification submittal. These test abstracts provide a description of each test including a brief overview of the results. The test category, identification number and the test title is on each abstract as well as the initial and final condition of the test. Each Summary also briefly describes the simulator features tested, the source of evaluation data and test results. They are provided as Attachments C-2 through C-6 in Appendix C.

Where appropriate, the performance tests selected for certification are supported by analysis data which includes the plant response recorded from specific events and evolutions, engineering

analyses, the WNP-2 Final Safety Analysis Report as well as other supporting information. This baseline information is cross-indexed to the supported test procedures and is available on the Configuration Management System (CMS) to Simulator and License Training personnel.

The test results shown on the abstract are those which existed at the time of this certification report. All identified discrepancies from these performance tests have been evaluated for potential impact to simulator training and performance evaluations. The disposition of the certification performance test results are provided in Section 6.4 of this report.

5.1.1 Computer Real Time Verification

The simulator is monitored for real time operation through timing tests. Each of the computers in the simulator computer complex has total time execution per frame measured. The test has no effect on the simulation and runs as a background task. The simulator presently maintains acceptable real-time operation during the conduct of its assigned training and evaluation scenarios. This test is intended to verify ANSI/ANS-3.5 (1985) requirements for real-time operation. The abstract for this test is given as Attachment D-2 of Appendix D.

5.1.2 Normal Plant Evolutions

This series of tests demonstrates the simulator's ability to be operated over the full operating range from full power to cold shutdown and back to full power. The tests are based directly on WNP-2 operating procedures. All indicators, computer readouts, alarms and other man-machine interfaces used during the plant evolution are verified in the simulator.

This category of tests also verifies the nuclear characteristics of the simulated core model. The core's response is verified against the WNP-2 cycle 1 mid-life core. Flux profiles, thermal performance and flux response to core flow are also checked.

This set of tests addresses ANSI/ANS - 3.5 (1985) section 3.1.1 (1) through 3.1.1 (10) Normal Plant Evolutions. Attachment D-3 of Appendix D gives the abstracts of these tests.

5.1.3 Steady State Operation

The purpose of the tests in this category are to verify the accuracy of the simulator at steady state power levels. At various power levels, the energy balance is checked to determine that reactor power is consistent with turbine power and that there are no unknown energy losses in the simulation. Heat balance performance is compared for key parameters as identified in ANSI/ANS

- 3.5 (1985) Appendix B 1.1 Steady State Performance. Steady state stability is also verified here. Abstracts of these tests' results are Attachment D-4, Appendix D.

5.1.4 Transient Performance

This series of tests are to verify that the WNP-2 simulator performs in accord with the criteria of ANSI/ANS - 3.5 (1985) Appendix B 1.2 Transient Performance. Selected transients are introduced into a stable operating condition and the effects observed and recorded. Response of the simulator is expected to be consistent with the expected response of the plant under similar conditions. See Attachment C-5 of Appendix C for abstracts of these tests.

5.1.5 Plant Malfunctions

This series of tests were performed to verify the proper response of the simulator to abnormal and emergency events including malfunctions available in the simulator. These tests are intended to verify the inherent plant response as predicted or known for the particular type of failure. The test procedures are written to specifically address each of the malfunctions listed per ANSI/ANS - 3.5 (1985) Sections 3.1.2 (1) through 3.1.2 (25). Specific tests were also selected to validate the simulator to known plant responses as substantiated by operating experience or analysis. Appendix D, Attachment D-6 gives the abstracts for these tests.

5.2 Training/Evaluation Scenarios

The Supply System's decision to procure a new simulator was predicated in part due to shortcomings in model performance compounded by older, simplified models. These concerns with fidelity also led to performing the upgrades discussed in Section 2.3 as well as the exercise of care in the preparation and use of the simulator for training and evaluation. That care is exhibited in the development and verification of simulator scenarios, tracking of known discrepancies and establishing work arounds or alternate training to compensate for these shortcomings.

The Supply System uses a preestablished inventory of simulator scenarios for training sessions. An additional set of Emergency Operating Procedure (EOP) scenarios are used for EOP training and evaluation. The objective has been to focus efforts to address identified discrepancies that affect current and planned training for the remainder of the simulator's useful life. Consistent with this emphasis, the certification testing has had the additional objective, with verifying the simulator performance to the ANSI/ANS-3.5 (1985) requirements, to validate the malfunctions now in use for training scenarios. Appendix E lists these additional tests that were conducted and provides abstracts of their results.

5.3 Quadrennial Test Schedule

Consistent with this certification, the Supply System will conduct continued testing in accordance with Regulatory Guide 1.149, Section C.5. Selected performance tests are planned to be repeated annually with others over the 4-year period allowing more than 25% of the total to be conducted each year.

The Supply System also plans to test or validate each malfunction that may be added to the current training/evaluation repertoire. The current scope of malfunctions have been incorporated into the test program for this initial certification. Although the Supply System anticipates delivery, installation, and certification of its new simulator within 18 months of the date of this certification, test plans are provided for a four-year period in accord with requirements.

5.3.1 Annual Testing

Annual testing will include:

1. Computer Real-Time Verification
   - Test No. 14.5.4 Simulator Real Time

2. Steady-State Operation Tests
   - Test No. 14.4.3.1 - 1 Hour Stability
   - Test No. 14.4.4.1 - 100% SS Accuracy
   - Test No. 14.4.4.2 - 66% SS Accuracy
   - Test No. 14.4.4.3 - 40% SS Accuracy
   - Test No. 14.4.5.1 - 100% Heat Balance
   - Test No. 14.4.5.4 - 100% Mass Balance

3. Benchmark Transient Tests
   - Test No. 14.4.7.1 - Normal Plant Operations
   - Test No. 14.4.9.24.33 - Manual Scram
   - Test No. 14.4.10.5 - Simultaneous Trip of All RFP's
   - Test No. 14.4.10.3 - Closure of All Main Steam Isolation Valves
   - Test No. 14.4.10.6 - Trip of All Recirculation Pumps
   - Test No. 14.4.9.24.34 - Recirculation Pump B Trip
   - Test No. 14.4.9.24.31A - Main Turbine Trip from LT 30%

Test No. 14.4.8.4 - Power Ramp from 100% PWR to 75% to 100%
Test No. 14.4.10.7 - Maximum Size Reactor Coolant System Rupture w/Loss of Offsite Power
Test No. 14.4.10.9 - Maximum Size Insoluble MSL Rupture
Test No. 14.4.10.10 - MSIV ISOL with SRV Full Open

5.3.2 Quadrennial Testing

The tests that will be conducted in years one through four following the Supply System's submittal of Form 474 are identified, by year, in Appendix F. These schedules represent performance of approximately 25 percent of the total tests required for certification per year. Any deletions or changes in scope or to ANSI/ANS-3.5 (1985) acceptance criteria related to these tests will be addressed by the refiling of Form 474 to reflect changes in the Supply System's plans.

6. COMPLIANCE

The following section summarizes the fidelity of the simulator with respect to the applicable requirements and the endorsed Standard. The Supply System's certification submittal follows the recommended guidance of ANSI/ANS-3.5 (1985) Appendix A. The information here is intended to provide a sufficient basis to exhibit that simulator fidelity to the reference plant has been assessed and simulator performance has been verified.

6.1 10 CFR 55.45 Regulatory Requirements

The Supply System takes no exception to the requirements of 10 CFR 55.45 - Operating Tests. It should be noted that this certification is being submitted at a later date than that required by this Regulation. This late submittal was allowed through the Nuclear Regulatory Commission's approval of the Supply System's request for an extension to the submission deadline. Specific reference to these communications is provided as part of our cover letter of transmittal for this certification.

6.2 Regulatory Guide 1.149

The Supply System has prepared its certification to conform to the regulatory direction of U.S. NRC Regulatory Guide 1.149 - Nuclear Power Plant Simulation Facilities for Use in Operator License Examinations. As such it takes no exception to the specific guidance contained therein. The evaluations conducted in accord to this guidance have documented a number of deficiencies with resect to the ANSI/ANS - 3.5 (1985) Standard endorsed by Regulatory Guide 1.149.

Since the Supply System is in process of having a new simulator constructed, selected identified deficiencies are not planned for correction in the current simulator. These deficiencies are taken as permanent exceptions to requirements of ANSI/ANS - 3.5 (1985) for the current simulator..

The following subsections provide a summary of the limitations of the current simulator to the certification requirements.

6.3 Exceptions to ANSI/ANS-3.5 (1985)

Exceptions to ANSI/ANS-3.5 (1985) not planned to be corrected on the current simulator are summarized here. The identified exceptions that affect training are to be reconciled by the expanded scope of the new simulator.

Our assessment of identified discrepancies also considered other factors in determining their disposition. Whether training or evaluations could be conducted using job performance measures in the reference plant control room as an alternative to simulator training was one factor. Near term training plans were a second factor; if an identified discrepancy was not within the current purview of training emphasis, its correction might be deferred until receipt of the new simulator. The cost to correct discrepancies on a simulator with a limited remaining life was also considered. The addition of major capital equipment investment in the current simulator was not desired.

The following summary is provided to parallel applicable requirements of ANSI/ANS-3.5 (1985).

6.3.1 Simulator Capabilities

Simulator performance has been established by the conduct of performance tests per ANSI/ANS-3.5 (1985) Section 5.4 Simulator Testing. These tests were performed and the results assessed using the guidance of Section 4. - Performance Criteria, of the Standard.

All Boiling Water Reactor (BWR) related capabilities were evaluated during the course of certification testing. Only one exception is taken in the conduct of tests per Section 3.1 - Simulator Capabilities and Appendix B.1 BWR Simulator Operability Tests of the Standard. That is, Plant Malfunction 3.1.2 (5) which addresses the loss of condenser level control: The simulator does not have the condenser hotwell level controller as currently implemented in the reference plant. The ability to adequately evaluate this malfunction is limited since the controller is required to initiate corrective action.

6.3.2 Simulator Environment

The degree of panel simulation is shown on Figure A-1, "Gould Simulator Scope" in Appendix A. The simulated and partially simulated panels are shown as highlighted.

The panels and panel sections not simulated were determined to have minor impact and did not need to be incorporated into the simulator for one or more of the following reasons: 1) a similar or redundant panel for another division is simulated, 2) operator actions on these panels are routine,

or 3) compensatory classroom or on-the-job training is utilized for panel manipulation instruction. Appendix B-1 provides a listing of the panels determined to have minor training impact that are not included on the current simulator. This information is available from the simulator configuration management system.

The simulator also has 11 partially simulated panels. For two panels, the lack of full simulation was assessed to have no training impact. The remaining nine partially simulated panels determined to have minor training impact are listed in Appendix B-2. For reference, a listing of the fully simulated panels is provided as Attachment B-3 in Appendix B.

A detailed comparison for each instrument and control on each simulator panel was also made with each matching reference plant control room item. Appendix B-4 provides a summary of the discrepancies identified by comparing the simulated instruments and controls with the reference plant control room. The Supply System takes exception for several key instrumentation systems including the Rod Worth Minimizer, Leak Detection Equipment, Wide Range Neutron Monitoring System and the Condenser Hotwell Level Control System which are not planned for implementation in the simulator. The simulator control room environment assessment identified no discrepancies that have any training impact.

6.3.3 Systems Simulated and the Degree of Completeness

The systems included in the simulator and their functional range have been established by the capabilities required to support training and evaluations. As noted, the simulator provides a simulated system scope consistent with the scope of panel simulation.

The degree of completeness of simulation necessary to perform the reference plant evolutions described in ANSI/ANS-3.5 (1985) Sections 3.1.1 (Normal Plant Evolutions) and 3.12 (Plant Malfunctions) has been assessed as part of the test program.

6.3.4 Simulator Training Capabilities

The core model available in the simulator does not include the capability to allow selection of initial conditions at various times in the core life. With this exception, the current instructor station has all the capabilities required by Section 3.4 of ANSI/ANS-3.5 (1985).

6.3.5 Simulator Design Control

The Supply System takes no exceptions to the requirements of Sections 5.1 Simulator Design Data and 5.2 Simulator Update Design Data of ANSI/ANS-3.5 (1985). The simulator's design information is controlled and maintained to provide for the correlation of the simulators physical configuration and performance to the reference plant. The Supply System takes exception to the requirement of Section 5.3, Simulator Modifications, of the Standard, in that modifications on the existing simulator will be limited.

Outstanding and current Plant Modifications Records (PMRs) were assessed for this certification. Each PMR was evaluated individually to determine if the corresponding modification should be made on the simulator. There are currently 123 modifications that have been completed in the reference plant, determined to impact either the simulator hardware or software, and not yet incorporated in the simulator.

Those PMR's determined to impact scheduled training have had CR's written and will be corrected. The PMR or its subsequently written Change Request was "deferred", if it had little to no impact on training. It was also deferred if the modification was not determined to be cost effective, and the changes are scheduled to be incorporated on the replacement simulator, and other training materials (on-the-job training, classroom etc.) provide adequate coverage of this information.

6.4 Upgrades and Corrections

All outstanding Change Requests (CR's) were evaluated as to their impact on current training and the cost of making the modification to the existing simulator. The relative benefit of making a change was considered for the remaining expected life of the simulator. This evaluation resulted in categorizing the CR's as either "open", on "hold" or "deferred".

"Open" Change Requests are planned to be implemented on the current simulator as training schedules and priorities dictate. The priority for making these corrections will be determined based on the need to meet ongoing training requirements. Open CR's include many discrepancies identified from certification testing and reviews.

Change Requests in the "deferred" category represent identified discrepancies that are not planned to be implemented in the current simulator. These include exceptions summarized in Section 5.3 of this submittal. CR's in this category, although having an impact on training, either

1) require excessive resources or materials to implement and other training measures are used to compensate or 2) the CR has minor or no impact on current and planned training.

A third category was established to allow for changes in training emphasis and priorities of required corrections. CR's on "hold" will be reevaluated quarterly to determine if they should be reassigned to the "open" category and implemented.

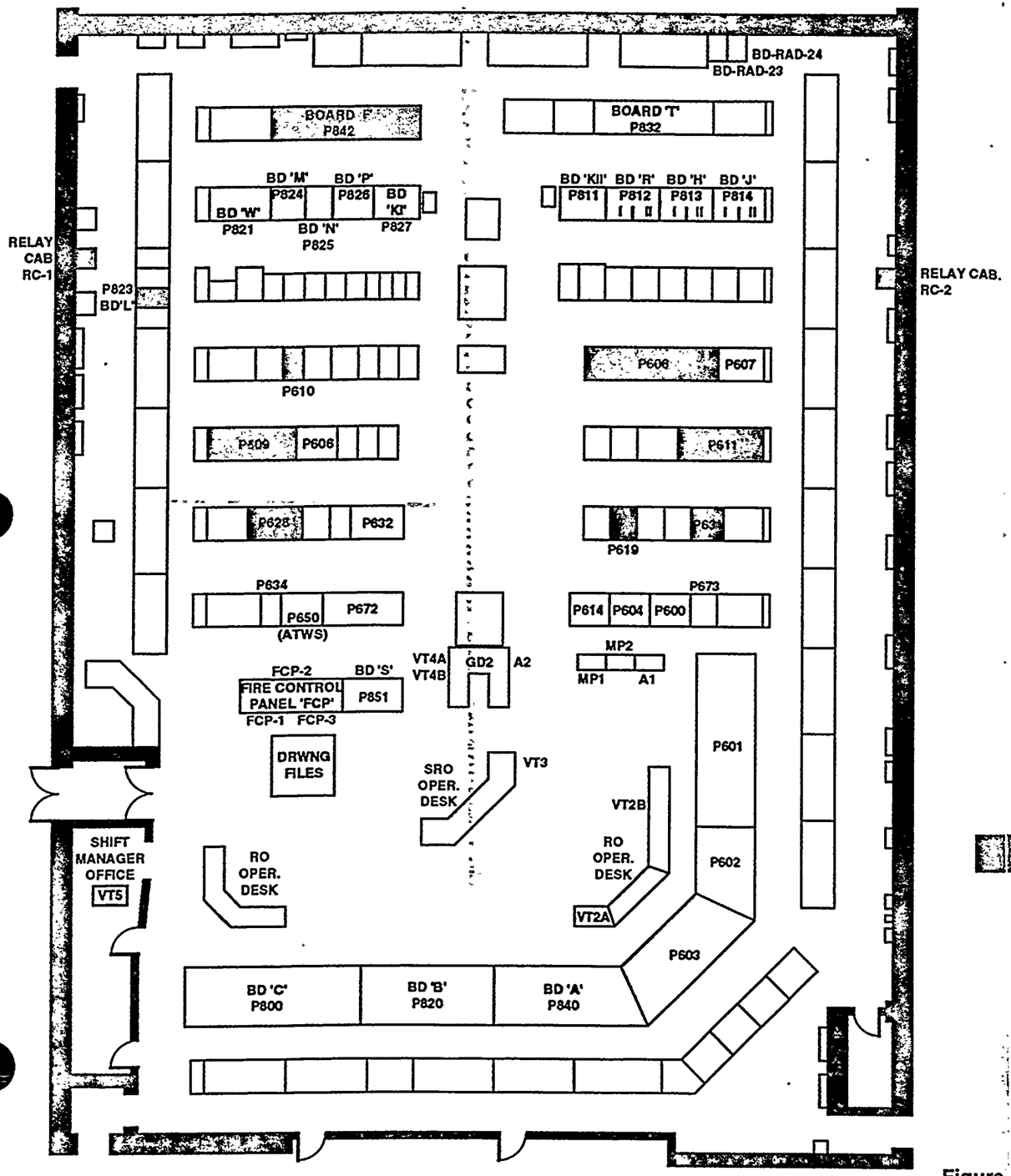
WNP-2 SIMULATOR CERTIFICATION

APPENDIX A
SIMULATOR SCOPE DIAGRAMS

Figure A-1 Gould (current) Simulator Scope
Figure A-2 Westinghouse (new) Simulator Scope
Figure A-3 Gould Simulator Layout

GOULD SIMULATOR SCOPE

Main Control Room



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LEGEND:

PARTIAL PANEL SIMULATED

FULL SCOPE SIMULATION

Remote Shutdown Room

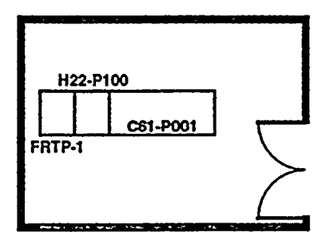

Figure A-1

Equipment List

IDENT.	DESCRIPTION
C750-GDS1-TP	TOUCH PAD DISPLAY
C750-GDS1-CRT	CATHODE RAY TUBE DISPLAY
C70-GDS2-TP	TOUCH PAD DISPLAY
C70-GDS2-CRT	CATHODE RAY TUBE DISPLAY
VT2 TO VT5	PPCRS COLOR GRAPHIC TERMINALS
PPCRS-A1&A2	PPCRS ALARM PRINTERS
H22-P100	REMOTE SHUTDOWN
C61-P001	REMOTE SHUTDOWN
RC-1	RELAY CABINET
RC-2	RELAY CABINET
C750-GD2	GRAPHIC DISPLAY TERMINAL 2
C750-MP1	MATRIX PRINTER
C750-MP2	MATRIX PRINTER
FRTP-1	FIRE REMOTE TRANSFER PANEL
BOARD 'A'	BENCHBOARD
BOARD 'B'	BENCHBOARD
BOARD 'C'	BENCHBOARD
BOARD 'F'	GEN 22 HOUSE PROTECTION
BOARD 'H'	CONTAINMENT VENT & PURGE
BOARD 'J'	CONTAINMENT MONITOR SYSTEM
BOARD 'Kl'	SGT TRAIN A & CAC DIV 1
BOARD 'Kll'	SGT TRAIN B & CAC DIV 2
BOARD 'M'	TMU / COOLING TOWER SYSTEMS
BOARD 'N'	RCC / SW SYSTEMS
BOARD 'P'	CONTROL ROOM HVAC
BOARD 'R'	REACTOR / RADWASTE BLDG HVAC
BOARD 'S'	ISOLATION VALVE & STAT LIGHT DISPLAY
BOARD 'T'	FEEDER WATER & HEATERBYPASS DISPLAY
BOARD 'W'	MAINSTREAM LEAKAGE CONTROL SYS. CONTROLS.
P600	PROCESS RADIATION MONITORS
P601	BENCHBOARD
P602	BENCHBOARD
P603	BENCH BOARD
P604	PROCESS RADIATION MONITOR
P606	RPS-A / RADIATION MONITORS
P607	TIP CONTROL MONITOR
P609	POWER RANGE NEUTRON MONITOR
P607	TRIP SYSTEM / ARPS
P610	ROD TESTING
P611	TRIP SYSTEM / RPS
P614	PROCESS MISC MONITORS
P619	JET PUMP INSTRUMENTATION
P628	AUTOMATIC DEPRESSURIZATION DIV 1 LOGIC
P632	DIVISION I LEAK DETECTION
P634	RECIRCULATION CONTROL
P650	ATWS (AUTOMATIC TRIP WITHOUT SCRAM)
P672	OFF GAS
P673	AREA RADIATION MONITORING
P823-BD 'L'	METEROLOGICAL SYSTEM
FCP	FIRE CONTROL PANEL
BD-RAD-23	RAD MONITOR CONTROL BOARD
BD-RAD-24	BLDG RELEASE RAD MONITOR
P63	ADS DIV 2 LOGIC

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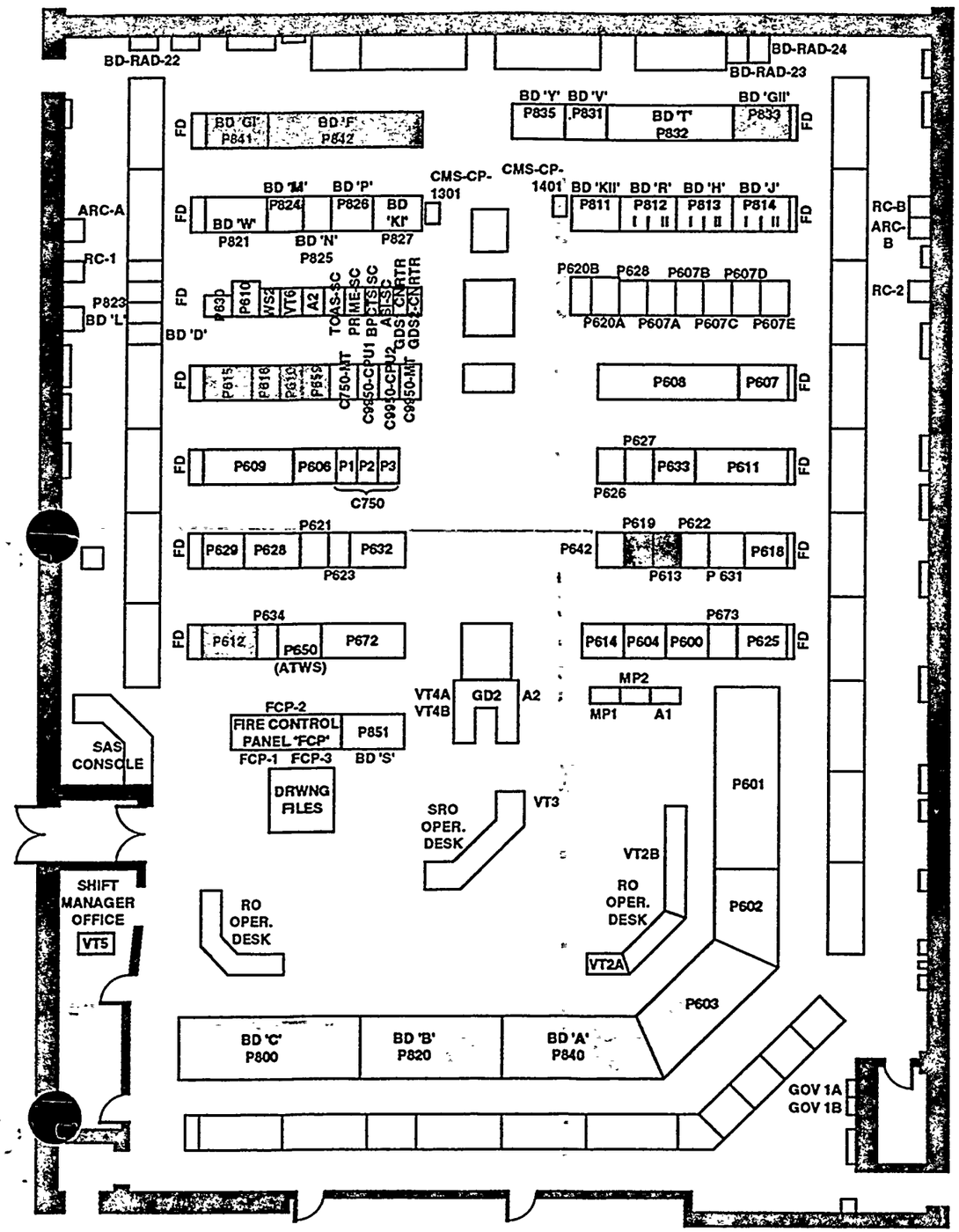
WESTINGHOUSE SIMULATOR SCOPE

Main Control Room



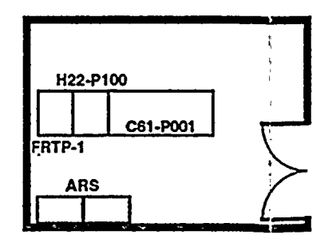
Equipment List

IDENT.	DESCRIPTION
C750-GDS1-TP	TOUCH PAD DISPLAY
C750-GDS1-CRT	CATHODE RAY TUBE DISPLAY
C70-GDS2-TP	TOUCH PAD DISPLAY
C70-GDS2-CRT	CATHODE RAY TUBE DISPLAY
VT2 TO VT5	PPCRS COLOR GRAPHIC TERMINALS
PPCRS-A1&A2	PPCRS ALARM PRINTERS
H22-P100	REMOTE SHUTDOWN
C61-P001	REMOTE SHUTDOWN
ARC-A	RELAY CABINET
RC-1	RELAY CABINET
RC-B	RELAY CABINET
ARC-B	RELAY CABINET
RC-2	RELAY CABINET
H13-P859	ROD SEQUENCE CONTROL SYSTEM
C750-GD2	GRAPHIC DISPLAY TERMINAL 2
C750-MP1	MATRIX PRINTER
C750-MP2	MATRIX PRINTER
FRTP-1	FIRE REMOTE TRANSFER PANEL
BOARD 'A'	BENCHBOARD
BOARD 'B'	BENCHBOARD
BOARD 'C'	BENCHBOARD
BOARD 'D'	TEMPERATURE SCANNER
BOARD 'F'	GEN & TRANSF. PROTECTION
BOARD 'H'	CONTAINMENT VENT & PURGE
BOARD 'J'	CONTAINMENT MONITOR SYSTEM
BOARD 'KI'	SGT TRAIN A & CAC DIV 1
BOARD 'KII'	SGT TRAIN B & CAC DIV 2
BOARD 'L'	STRONG MOTION RECORDR/MET RECD
BOARD 'M'	TMU / COOLING TOWER SYSTEMS
BOARD 'N'	RCC / SW SYSTEMS
BOARD 'P'	CONTROL ROOM HVAC
BOARD 'R'	REACTOR / RADWASTE BLDG HVAC
BOARD 'S'	ISOLATION VALVE & STAT LT DSPLY
BOARD 'T'	FEEDER WTR & HTRBYPASS DSPLY
BOARD 'W'	MNSTREAM LEAKAGE CRNTL SYSTEM. CNTRLS.
BOARD 'V'	WETWELL MONITOR
BOARD 'Y'	FEEDWATER HTR LVL CONTOL
BOARD 'GI'	ANALOG I
BOARD 'GII'	ANALOG II

Equipment List Continued

IDENT.	DESCRIPTION
P600	PROCESS RADIATION MONITORS
P601	BENCHBOARD
P602	BENCHBOARD
P603	BENCH BOARD
P604	PROCESS RADIATION MONITORS
P606	RPS-A / RADIATION MONITOR
P607	TIP CONTROL & MONITOR
P608	POWER RANGE NEUTRON MONITOR
P609	TRIP SYSTEM 'A' RPS
P610	ROD TEST
P611	TRIP SYSTEM 'B' RPS
P612	PROCESS INSTRU.
P613	PROCESS INSTRUMENTATION
P614	PROCESS MISC. MONOITORS
P615	CONTROL ROD POSITION
P616	ROD DRIVE
P618	DIVISION II RHR PUMPS 'B' & 'C'
P619	JET PUMP INSTRUMENTATION
P621	REACTOR CORE ISOLATION COOLANT
P622	INBOARD ISOLATION VALVES
P623	OUTBOARD ISOLATION VALVES
P625	HIGH PRESSURE CORE SPRAY
P628	DIV. I FUEL POOL COOLING FPC-1
P627	DIV. II FUEL POOL COOLING FPC-2
P628	AUTOMTC DEPRESSURIZATION SYSTEM 'A'
P629	DIVISION I LPCI & RHR PUMP 'A'
P631	AUTOMTC DEPRESSURIZATION SYSTEM 'B'
P632	DIVISION I LEAK DETECTION
P633	RPS-B / RADIATION MONITOR
P634	RECIRCULATION CONTROL
P642	DIVISION II LEAK DETECTION
P650	ATWS (AUTOMATIC TRIP WITHOUT SCRAM)
P672	OFF GAS
P673	AREA RADIATION MONITORING
RFT GOV 1A,B	REACTOR FEED PUMP TURB CNTRL PNL
FCP	FIRE CONTROL PANEL
FD	BOARD FIRE PROTECTION CABINET
ARS	ALTERNATE REMOTE SHUTDOWN PANEL
CP-1301	H2/O2 MONITOR
CP-1401	H2/O2 MONITOR

Remote Shutdown Room



LEGEND:

PARTIAL PANEL SIMULATED

FULL SCOPE SIMULATION

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Figure A-2

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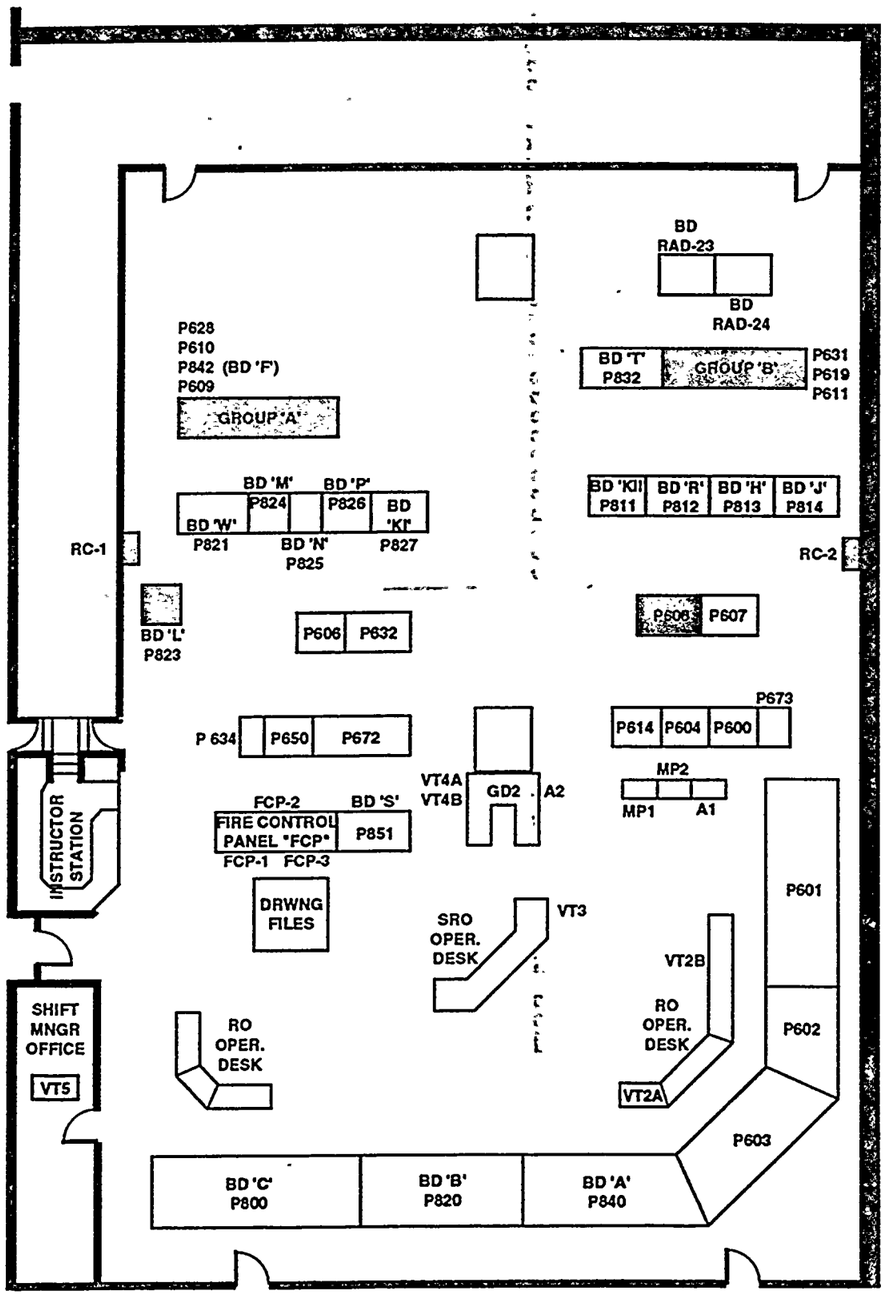
GOULD SIMULATOR LAYOUT

Simulator Control Room



LEGEND:

PARTIAL PANEL SIMULATED

FULL SCOPE SIMULATION

Remote Shutdown Room

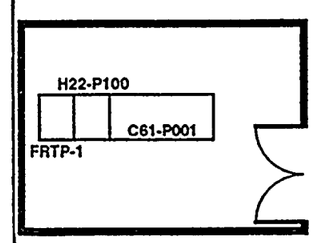


Figure A-3

Equipment List

IDENT.	DESCRIPTION
C750-GDS1-TP	TOUCH PAD DISPLAY
C750-GDS1-CRT	CATHODE RAY TUBE DISPLAY
C70-GDS2-TP	TOUCH PAD DISPLAY
C70-GDS2-CRT	CATHODE RAY TUBE DISPLAY
VT2 TO VT5	PPCRS COLOR GRAPHIC TERMINALS
PPCRS-A1&A2	PPCRS ALARM PRINTERS
H22-P100	REMOTE SHUTDOWN
C61-P001	REMOTE SHUTDOWN
RC-1	RELAY CABINET
RC-2	RELAY CABINET
C750-GD2	GRAPHIC DISPLAY TERMINAL 2
C750-MP1	MATRIX PRINTER
C750-MP2	MATRIX PRINTER
FRTP-1	FIRE REMOTE TRANSFER PANEL
BOARD 'A'	BENCHBOARD
BOARD 'B'	BENCHBOARD
BOARD 'C'	BENCHBOARD
BOARD 'F'	GEN & TRANSF. PROTECTION
BOARD 'H'	CONTAINMENT VENT & PURGE
BOARD 'J'	CONTAINMENT MONITOR SYSTEM
BOARD 'KI'	SGT TRAIN A & CAC DIV 1
BOARD 'KII'	SGT TRAIN B & CAC DIV 2
BOARD 'M'	TMU / COOLING TOWER SYSTEMS
BOARD 'N'	RCC / SW SYSTEMS
BOARD 'P'	CONTROL ROOM HVAC
BOARD 'R'	REACTOR / RADWASTE BLDG HVAC
BOARD 'S'	ISOLATION VALVE & STAT LIGHT DISPLAY
BOARD 'T'	FEEDER WATER & HEATERBYPASS DISPLAY
BOARD 'W'	MAINSTREAM LEAKAGE CONTROL SYS. CONTROLS.
P600	PROCESS RADIATION MONITORS
P601	BENCHBOARD
P602	BENCHBOARD
P603	BENCH BOARD
P604	PROCESS RADIATION MONITOR
P606	RPS-A / RADIATION MONITORS
P607	TIP CONTROL MONITOR
P608	POWER RANGE NEUTRON MONITOR
P609	TRIP SYSTEM 'A' RPS
P610	ROD TEST
P611	TRIP SYSTEM 'B' RPS
P614	PROCESS MISC MONITORS
P619	JET PUMP INSTRUMENTATION
P628	AUTOMATIC DEPRESSURIZATION DIV 1 LOGIC
P632	DIVISION I LEAK DETECTION
P634	RECIRCULATION CONTROL
P650	ATWS (AUTOMATIC TRIP WITHOUT SCRAM)
P672	OFF GAS
P673	AREA RADIATION MONITORING
P823 BD	METEROLOGICAL SYSTEM
FCP	FIRE CONTROL PANEL
BD-RAD-23	RAD MONITOR CONTROL BOARD
BD-RAD-24	BLDG RELEASE RAD MONITOR
P631	ADS DIV 2 LOGIC

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WNP-2 SIMULATOR CERTIFICATION

APPENDIX B
SIMULATOR ENVIRONMENT

Attachment B-1 Panels and Panel Sections Not Simulated
Attachment B-2 Partially Simulated Panels
Attachment B-3 Fully Simulated Panels
Attachment B-4 Controls on Panels
Attachment B-5 Control Room Environment

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT B-4
CONTROLS ON PANELS

The following is a summary of the comparison made for each instrument and control on each simulator panel with each matching reference plant control room item. Detailed information on each identified discrepancy is available in the configuration management system. In this area, the assessment identified a number of deficiencies, some of them redundant (e.g. an incorrect instrument with an incorrect label), with most determined to have no or minimal impact to training:

Annunciators & Alarms - The identified annunciator deficiencies were primarily due to engraving errors. Errors involving incorrect word order or incorrect color when illuminated (white vs. amber etc.), were determined not to impact training.

A majority of the deficiencies were identified for the annunciator windows on the Fire Control Panels. These deficiencies resulted from a plant modification which edited the wording on these windows. This change has minimal impact on training, and correction is deferred with these discrepancies documented for training purposes. In addition, annunciator windows associated with deferred modifications are also deferred and will be separately identified for training.

Discrepancies determined to impact current training, resulting from plant modifications, incorrect wording, or windows that have been "blanked" in the plant have been incorporated as Change Requests to be corrected.

Controllers - Only 3 controllers on the simulated panels were identified as having discrepancies. One discrepancy due to minor labeling error had no impact on training. The other two discrepancies result from the Condenser Hotwell level control modification, which has been deferred based on minimal training impact and operator familiarity with these controls.

Demarcation Lines - The deficiencies in this category result from the replacement of control room recorders or panels that have been partially simulated. Since the demarcation lines are correct for the existing simulator configuration, these lines have no impact on training.

Escutcheons - The majority of discrepancies in this category are minor errors in switch labels which do not impact operation of the associated control (i.e. use of "NORM" vs. "NOR" etc.). Discrepancies related to plant modifications (Containment ventilation fans and Turbine Oil exhauster) determined to impact training will be corrected via Change Requests.

Misc. Hardware - This category includes discrepancies in test modules, telephones, phone jacks, control room furnishings, labels on this equipment etc. The majority of these items do not impact training as they are not used by operations. Approximately 25% of these discrepancies have minimal impact on training (including the replacement of the Turbine Supervisory system equipment) and are deferred until the replacement simulator, but will be identified for training purposes. Those discrepancies with more significant impact on training (new Rod Worth Minimizer, Leak Detection equipment, Wide Range Neutron Monitoring system) have been identified with Change Requests and will be further evaluated for incorporation into the existing simulator on a quarterly basis. Items considered as part of the control room environment, e.g. furnishings etc., are discussed in Section 5.3.3 to follow.

Relays - Only one relay that is simulated was identified as a discrepancy. It is on the panel in the simulator but not the plant. This discrepancy has negligible training impact but will be identified for training purposes. Note that a number of relays are not simulated and were included in that category below.

Lights - This category identifies lights associated with control functions that have improper engraving or a removed in the actual control room. Approximately half represent only minor changes that do not impact training. Those that affect operation of the plant, including significant engraving errors or have been removed from the control room panels have been identified and will be corrected through the Change Request process.

Meters - This category identifies meters with improper scales or labeling, meters that have been replaced or removed etc. Approximately 25% of these represent only minor differences in size of characters or brand name labeling and do not impact training. Those discrepancies that are deferred include meters associated with equipment whose change is deferred until the replacement simulator, including the Turbine Supervisory system, and recorder replacement on P601. These discrepancies are all identified for training purposes.

Not Simulated - This category includes any items found in the plant control room but are not simulated. This primarily includes; control room panels and furnishings, electrical relays, computer terminals, copier equipment and the label tags associated with this equipment. Each tag, associated with a device not simulated, has been separately identified but is considered to have no impact on training, since the device itself has also been evaluated for impact. The items in this category that are being deferred consist of panels and relays that are not simulated.

Operator Aids - This category includes the approved messages and charts posted on the control room panels that disagree with or are not simulated. Those identified as no impact on training include those on the TIP panels which are not used by operators, and on equipment that will be removed from the simulator based on plant modifications. Those that impact operations have been identified for correction through the Change Request process.

Entire Panel - This category identifies panels that are of the incorrect color or are only partially simulated. Each of the items in this category have been deferred until the replacement simulator and are identified for training purposes.

Mimic - This category identifies discrepancies associated with the lines that mimic system flowpaths etc. A majority of those identified include improper or non-existent mimicking and will be corrected though the Change Request process.

Recorders - This category identifies discrepancies associated with control room recorders. Most of these discrepancies are the result of an ongoing plant control room modification to replace recorders. The majority of these recorder changes are being deferred until the replacement simulator based on the operators frequent use and familiarity of these in the control room. Those recorders that have been removed or have incorrect labeling will be corrected though the Change Request process.

Switches - Discrepancies concerning switches result from items that are no longer in the plant or have a different appearance than those in the control room. Those with minor differences such as the shape of the ring behind the switch, have no impact on training. The discrepancies associated with switches that were removed with the replacement of the Leak Detection System equipment have been identified with a Change Request and will be further evaluated for incorporation into the existing simulator on a quarterly basis. Those switches with incorrect labels or that are related to a plant modification which has not been deferred in the simulator will be corrected through the Change Request process.

Tags - Tag deficiencies identified are primarily due to engraving errors or tags that are missing or need to be removed. Those tags associated with devices previously identified in other categories as an item to be deferred or with no training impact were evaluated as no impact to training. Those tags which had only minimal impact on training were deferred and identified for training purposes. Tags associated with equipment that has been altered by a plant modification or have an impact on device identification or operation will be corrected through the Change Request process.

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT B-5
CONTROL ROOM ENVIRONMENT

The discrepancies that our assessment identified are summarized as follows:

Dimensions - The simulated control room has the same operational floor space available as in the reference plant control room. The dimensions of the simulator control room extend to the location of the termination cabinets on the north, south and west walls of the reference plant control room. The simulated control room has been truncated approximately 20 feet short of the actual control room with a temporary wall at the end opposite of the main control panels (east wall of reference plant control room). The simulated control room's ceilings and floors match the reference plant control room.

Facilities - The simulator includes a partially simulated replica of the shift manager's office which is outfitted with plant procedures as contained in the reference plant control room. Other items such as logs and furniture in the shift managers office are not replicated. The double door airlock access to the plant control room is also not duplicated.

Color - It should be noted that the panels in the reference plant control room are now being repainted a different color. The new simulator has incorporated this change into its design. The current simulator panels do not match the new color which is an exception to the Standard.

Layout - The main control panel layouts on the simulated control room floor are identical to the main control boards in the reference plant. Back panel locations on the simulator floor differ from the plant. Figure A-3 in Appendix A shows the location of the simulator's control panels.

Furniture - The stationary control room furniture including the reactor operator's desks and consoles, the senior reactor operator's desk, drawing cabinets and procedures storage cabinets are identical to the reference plant. Some movable furniture located in the plant control room along the walls or in back locations along the east wall are not included.

Procedures and Operator Aids - As noted previously, plant procedures used in the reference plant control room are also included and controlled in the simulator. Controlled operator aids in the control room are located identically on panels. Discrepancies in this category are summarized in Section 5.3.2.

Background - All lighting responses in the reference plant are available for simulation. Annunciator audible indications, horns and emergency tones are all simulated. The instructors have all communications systems available for simulated actions including radio and telephone communications. Control room background noises and plant noises are not simulated.

The discrepancies in the control room environment as compared to the reference plant control room were determined not to have a cost benefit to their training impact to correct for the remaining expected life of the simulator.

WNP-2 SIMULATOR CERTIFICATION
APPENDIX C
INSTRUCTOR INTERFACES

Attachment C-1 Simulator Initial Conditions
Attachment C-2 Local Operator Actions

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT C-1
SIMULATOR INITIAL CONDITIONS

IC	Power	Press	Xenon	Description
1	0%	14.71	0%	Cold Shutdown
2	0%	14.70	0%	Ready for S/U
3	0%	7.50	0%	Almost Critical
4	0%	7.54	0%	Point of Adding Heat
5	1%	136.82	0%	Heat Up @ 135#
6	12%	519.44	0%	Heat Up @ 520#
7	10%	866.97	.01	Heat Up @ 865#
8	21%	940.56	.01	Ready to Synch Main Tur
9	39%	953.39	.03	Ready for 60 Hz Operations
10	56%	963.00	.04	80% Rod Line
11	96%	994.97	.06	95% Min Xenon
12	100%	1001.57	1.03	100% PWR EQ Xenon
13	59%	965.35	1.17	Shutdown @ 60% Power
14	14%	940.41	1.67	Shutdown @ 14% Power
15	2%	933.72	1.96	All Rods In
16	1%	73.31	2.74	C/D @ 75#
17	0%	34.97	2.71	C/D @ 35#
18	0%	14.70	2.87	SDC In Progress

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT C-2
LOCAL OPERATOR ACTIONS

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
001	APRM-A GAF	APRM A GAIN ADJ FACTOR 0-2	FW	0 TO 2.0
002	APRM-B GAF	APRM B GAIN ADJ FACTOR 0-2	FW	0 TO 2.0
003	APRM-C GAF	APRM C GAIN ADJ FACTOR 0-2	FW	0 TO 2.0
004	APRM-D GAF	APRM D GAIN ADJ FACTOR 0-2	FW	0 TO 2.0
005	APRM-E GAF	APRM E GAIN ADJ FACTOR 0-2	FW	0 TO 2.0
006	APRM-F GAF	APRM F GAIN ADJ FACTOR 0-2	FW	O TO 2.0
007	AS-BLR-1	AUXILARY BOILER - ON	LB	
008	CAS-V-453	CAS-V-453 1=AIR 2=N2	IB	0 TO 2
009	CAS-C-1A	FIRE WTR FOR CAS COMPR.	LB	
010	CAS-C-1A	CAS COMPRESSOR RESET	LB	
011		CIA/CAS XTIE (N2=T; CAS=F)	LB	
012	COMPUTER	COMPUTER RESET AFT PWR LOSS	LB	
013	COND LKG	COND NOR SYS LKG (0-1E7)	FW	0.0 TO 1.E7
014	COND-V-1062	FIRE WATER X-ITE OPEN	LB	
015	COND-V-107A	COND PMP1A DISCH VLV 0-1.0	FW	0.0 TO 1.0
016	COND-V-107B	COND PMP1B DISCH VLV 0-1.0	FW	0.0 TO 1.0
017	COND-V-107C	COND PMP1C DISCH VLV 0-1.0	FW	0.0 TO 1.0
018	COND-V-120A	COND BOOST PMPA DIS.VLV 0-1	FW	0.0 TO 1.0
019	COND-V-120B	COND BOOST PMPB DIS VLV 0-1	FW	0.0 TO 1.0
020	COND-V-120C	COND BOOST PMPC DIS VLV 0-1	FW	0.0 TO 1.0
021	COND-V-161A	SS-EV-1A LCV BP VLV 0-1.0	FW	0.0 TO 1.0
022	COND-V-161B	SS-EV-1B LCV BP VLV 0-1.0	FW	0.0 TO 1.0
023	COND DEMINS	COND DEMINS ON LINE 0-5	FW	0 TO 5
024	COND-V-76	COND DEMIN B/P CNTR SW	LB	
025	COND-V-76	COND DEMIN B/P RST SW	LB	
026	COND-V-12A	CST 1A FILL VLV OPEN	LB	
027	COND-V-12B	CST 1B FILL VLV OPEN	LB	
028	COND-V-131	CND-LCV-1A BP VLV 0-1.0	FW	0.0 TO 1.0
029	COND-V-170	CND-LCV-1C BYP VLV 0-1.0	FW	0.0 TO 1.0
030	COND-V-612	CND-LCV-11 BP VLV 0-1.0	FW	0.0 TO 1.0
031	COND-FC-11	CND-FCV-11 IN CASCADE	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
032	COND-V-147A	FW PMP1A SUCT VLV 0-1.0	FW	0.0 TO 1.0
033	COND-V-147B	FW PMP1B SUCT VLV 0-1.0	FW	0.0 TO 1.0
034	CW-LCV-1	CIRC WTR BLOWDOWN 0-1.0	FW	0 TO 1
035	ROD #	RMCS ROD BYPASS 1-185	IB	1 TO 185
036	ROD 0-185	1ST ROD # BYPASSED BY RSCS	IB	0 TO 185
037	ROD 0-185	2ND ROD # BYPASSED BY RSCS	IB	0 TO 185
038	ROD 0-185	3RD ROD # BYPASSED BY RSCS	IB	0 TO 185
039	ROD 0-185	4TH ROD # BYPASSED BY RSCS	IB	0 TO 185
040	ROD 0-185	5TH ROD # BYPASSED BY RSCS	IB	0 TO 185
041	ROD 0-185	6TH ROD # BYPASSED BY RSCS	IB	0 TO 185
042	ROD 0-185	7TH ROD # BYPASSED BY RSCS	IB	0 TO 185
043	ROD 0-185	8TH ROD # BYPASSED BY RSCS	IB	0 TO 185
044	CRD-FCV-2A/B	CRD-FCV-2A LOCAL SEL SW	LB	
045	CRD-V-47A	CRD-FCV--2A ISOL VLV OPEN	LB	
046	CRD-V-47B	CRD-FCV-2B ISOL VLV OPEN	LB	
047		SCRAM AIR HDR VENT PLUG	LB	
048		SCRAM AIR HDR ISO VLV V-95	LB	
049		CHG LINE ISO VALVE V-34	LB	
050	CRD-V-14A	CRD-P-1A DIS VLV 0-1.0	FW	0.0 TO 1.0
051	CRD-V-14B	CRD-P-1B DIS VLV 0-1.0	FW	0.0 TO 1.0
052	CRD-V-501A	PURGE SUPPLY TO RWCU-P-1A	LB	
053	CRD-V-501B	PURGE SUPPLY TO RWCU-P-1B	LB	
054	CRD-FCV-512A	PURGE FCV TO RWCU-P-1A	FW	0.0 TO 1.0
055	CRD-FCV-512B	PURGE FCV TO RWCU-P-1B	FW	0.0 TO 1.0
056	BUS S1-1	C1-1 TO S1-1 BKR CLOSED	LB	
057	BUS S1-2	C1-2 TO S1-2 BKR CLOSED	LB	
058	BUS S1-3	C1-3 TO S1-3 BKR CLOSED	LB	
059	BUS S1-4	C1-4 TO S1-4 BKR CLOSED	LB	
060	BUS S1-7	C1-7 TO S1-7 BKR CLOSED	LB	
061	BUS S2-1	C2-1 TO S2-1 BKR CLOSED	LB	
062		S1-1 GND ANNUN RESET	LB	
063		S1-2 GND ANNUN RESET	LB	
064		S1-3 GND ANNUN RESET	LB	
065		S1-4 GND ANNUN RESET	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
066		S2-1 GND ANNUN RESET	LB	
067		HPCS GND ANNUN RESET	LB	
068	DEH-V-11	DEH OIL CLR SEL HX 1A	LB	
069	DG1	EXCIT SEL DG-1 IN PARRALLEL	LB	
070	DG2	EXCIT SEL DG-2 IN PARRALLEL	LB	
071	DG3	EXCIT SEL DG-3 IN PARRALLEL	LB	
072	DG1	DG1 IN MAINTENANCE	LB	
073	DG2	DG2 IN MAINTENANCE	LB	
074	DG1	DG 1 LCKOUT RELAY RESET	LB	
075	DG2	DG 2 LCKOUT RELAY RESET	LB	
076	DG3	DG 3 LCKOUT RELAY RESET	LB	
077		DG-1 IN IDLE	LB	
078		DG-2 IN IDLE	LB	
079	DG3	DG3 EMERGENCY STOP	LB	
080	PP-8A	BKR MC-8A TO PP-8A CLOSED	LB	
081	SM-1 LOAD	ASHE LOAD ON SM-1 0-100AMP	FW	0 TO 100
082	SM-3 LOAD	ASHE LOAD ON SM-3 0-100 AMP	FW	0 TO 100
083	MC-7C/7E	MC-7C/7E BKR RESET	LB	
084	MC-8C/8E	MC-8C/8E BKR RESET	LB	
085	86/7-DG1	FDR 7-DG1 O.C. LKOT RESET	LB	
086	86/8-DG2	FDR 8-DG2 O.C. LKOT RESET	LB	
087	KBKR-1-11	BKR 1/11 O/C LKOT RESET	LB	
088	BKR-1-7	BKR 1/7 O/C CKOT RESET	LB	
089	BKR-2-21	BKR 2/21 O/C LKOT RESET	LB	
090	BKR-2-4	BKR 2/4 O/C LKOT RESET	LB	
091	BKR-3-31	BKR 3/31 O/C LKOT RESET	LB	
092	BKR-3-8	BKR 3/8 O/C LKOT RESET	LB	
093	BKR-7-1	BKR 7/1 O/C LKOT RESET	LB	
094	BKR-75-72	BKR 75/72 O/C LKOT RESET	LB	
095	BKR-7-75	BKR 7/75 O/C LKOT RESET	LB	
096	BKR-8-3	BKR 8/3 O/C LKOT RESET	LB	
097	BKR-85-82	BKR 85/82 O/C LKOT RESET	LB	
098	BKR-8-85	BKR 8/85 O/C LKOT RESET	LB	
099	BKR-B7	BKR B7 O/C LKOT RESET	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
100	BKR-B8	BKR B8 O/C LKOT RESET	LB	
101	BKR-CTA	BKR CTA O/C LKOT RESET	LB	
102	BKR-CTB	BKR CTB O/C LKOT RESET	LB	
103	BKR-N1-1	BKR N1/1 O/C LKOT RESET	LB	
104	BKR-N1-2	BKR N1/2 O/C LKOT RESET	LB	
105	BKR-N1-3	BKR N1/3 O/C LKOT RESET	LB	
106	BKR-N2-5	BKR N2/5 O/C LKOT RESET	LB	
107	BKR-N2-6	BKR N2/6 O/C LKOT RESET	LB	
108	BKR-S1	BKR S1 O/C LKOT RESET	LB	
109	BKR-S2	BKR S2 O/C LKOT RESEET	LB	
110	BKR-S3	BKR S3 O/C LKOT RESET	LB	
111	BKR-S5	BKR S5 O/C LKOT RESET	LB	
112	BKR-S6	BKR S6 O/C LKOT RESET	LB	
113	FIRE PROT LK	FIRE SYSTEM LEAKAGE 0-1E7	FW	0.0 TO 0.0E7
114	FIRE PMPS	MAN STOP OF ALL FIREPUMPS	LB	
115	GEN MOD'S	MOD 89 STATUS - CLOSED	LB	
116	GRID FREQ	GRID FREQ. 59.9-60.1 HZ	FW	59.9 TO 60.1
117	GRID VOLT	GRID VOLT 450-550KV	FW	450K TO 550
118	GRID BUS SEL	BUS SEL NO=2 SO=1 NO BUS=0	IB	0 TO 2
119	H2-C02	H2 SUPPLY VLV 52 OPEN	LB	
120	IN1-CR3	IN-1, NOR AC BKR CLOSED	LB	
121	IN1-CB1	IN-1,NOR DC BKR CLOSED	LB	
122	IN1-CB5	IN-1, ALT AC BKR CLOSED	LB	
123	IN1 STAT SW	IN1 ST SW 1=NOR 2=INV 3=ALT	TB	1 TO 3
124	IN1 KIRK KEY	IN-1, KIRK KEY TO IN-1	LB	
125	IN2-CB1	INS NOR DC BKR CLOSED	LB	
126	IN2	IN-2 INVERTOR TO LOAD	LB	
127	IN2	IN-2 MAN XFER SW IN ALT AC	LB	
128	IN2	IN-2 ALT AC BKR CLOSED	LB	
129	IN3-CB1	IN3 NOR DC BKR CLOSED	LB	
130	IN3	IN-3 MAN XFER SW IN ALT AC	LB	
131	IN3	IN-3 ALT AC BKR CLOSED	LB	
132	IN3	IN-3 INVERTOR TO LOAD	LB	
133	LPCS-S15	LPCS D/G TEST SW S15 NORMAL	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
134	LPCS-RX-86	LPCS 86 LOCKOUT RESET	LB	
135	LPRM 08-41D	LPRM BYPASS SW IN BYPASS	LB	
136	LPRM 24-09B	LPRM BYPASS SW IN BYPASS	LB	
137	LPRM 16-09C	LPRM BYPASS SW IN BYPASS	LB	
138	LPRM 32-17A	LPRM BYPASS SW IN BYPASS	LB	
139	LPRM 48-17C	LPRM BYPASS SW IN BYPASS	LB	
140	LPRM 40-17D	LPRM BYPASS SW IN BYPASS	LB	
141	LPRM 32-25B	LPRM BYPASS SW IN BYPASS	LB	
142	LPRM 16-25D	LPRM BYPASS SW IN BYPASS	LB	
143	LPRM 40-33B	LPRM BYPASS SW IN BYPASS	LB	
144	LPRM 56-33C	LPRM BYPASS SW IN BYPASS	LB	
145	LPRM 24-33D	LPRM BYPASS SW IN BYPASS	LB	
146	LPRM 40-41D	LPRM BYPASS SW IN BYPASS	LB	
147	LPRM 24-49A	LPRM BYPASS SW IN BYPASS	LB	
148	LPRM 08-49C	LPRM BYPASS SW IN BYPASS	LB	
149	LPRM 16-57A	LPRM BYPASS SW IN BYPASS	LB	
150	MET	AMB TEMP @ 45 FT 0-100	FW	0 TO 100
151	MET-TR-1(R)	AMBIENT TEMP AT 33 FT 0-100	FW	0 TO 100
152	MET-HUMIDITY	AMBIENT % REL HUMID 10-95	FW	10 TO 95
153	MET-WDR-4(B)	WIND DIR @ 245' 0-540	FW	0 TO 540
154	MET-WDR-4(R)	WIND DIR @ 33' 0-100	FW	0 TO 540
155	MET-WSR-4(B)	WIND SPD @ 245" 0-100	FW	0 TO 100
156	MET WSR-4(R)	WIND SPD @ 33' 0-100	FW	0 TO 100
157	METER NOISE	FLOW INDICATORS/RCDRS 0-100	EW	0.0 TO 100.0
158	METER NOISE	PRESS INDICATOR/RCDRS 0-100	EW	0.0 TO 100.0
159	METER NOISE	RAD(ARM) INSTRUMENTS 0-100	EW	0.0 TO 100.0
160	METER NOISE	WIND SPEED RCDR 0-100	EW	0.0 TO 100.0
161	METER NOISE	WIND DIRECTION RCDR 0-100	EW	0.0 TO 100.0
162	METER NOISE	SRM PERIOD INDICATORS 0-100	EW	0.0 TO 100.0
163	METER NOISE	SRM COUNT METER/RCDRS 0-100	EW	0.0 TO 100.0
164	METER NOISE	IRM RECORDERS 0-100	EW	0.0 TO 100.0
165	METER NOISE	LPRM METERS 0-100	EW	0.0 TO 100.0
166	METER NOISE	GRP 10 NOISE CONTROL 0-100	EW	0.0 TO 100.0
167	METER NOISE	GRP 11 NOISE CONTROL 0-100	EW	0.0 TO 100.0

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
169	METER NOISE	GRP 13 NOISE CONTROL 0-100	EW	0.0 TO 100.0
170	METER NOISE	GRP 14 NOISE CONTROL 0-100	EW	0.0 TO 100.0
171	METER NOISE	GRP 15 NOISE CONTROL 0-100	EW	0.0 TO 100.0
172	GY-V-99B&80A	OFFGAS GLY TRN A IN SERV	LB	
173	GY-V-99A&80B	OFFGAS GLY TRN B IN SERV	LB	
174	OGV90A&110A	DRYER TRAIN A ON LINE	LB	
175	OGV90B&110B	DRYER TRAIN B ON LINE	LB	
176	OG-V-15A	OFFGAS CLR A INLET OPEN	LB	
177	OG-V-51B	OFFGAS CLR B INLET OPEN	LB	
178	OG-V-51C	OFFGAS CLR C INLET OPEN	LB	
179	OG-V-51D	OFFGAS CLR D INLET OPEN	LB	
180	REA-RIS-609B	DIV 2 Z-SIG RESET	LB	
181	RCC-V-13A	CRD-P-1A CLG WTR IN VLV 0-1	FW	0.0 TO 1.0
182	RCC-V-79A	CRD-P-1A DRF CL OUT VLV 0-1	FW	0.0 TO 1.0
183	RCC LKG	RCC SYSTEM LKG (0-1E7)	FW	0.0 TO 1.0E7
184	RCC-V-2A	RCC-P-1A DIS VLV 0-1.0	FW	0.0 TO 1.0
185	RCC-V-2B	RCC-P-1B DIS VLV 0-1.0	FW	0.0 TO 1.0
186	RCC-V-2C	RCC-P-1C DIS VLV 0-1.0	FW	0.0 TO 1.0
187	RCC-V-3A	RCC-HX-1A IN VLV 0-1.0	FW	0.0 TO 1.0
188	RCC-V-3B	RCC-HX-1B IN VLV 0-1.0	FW	0.0 TO 1.0
189	RCC-V-3C	RCC-HX-1C IN VLV 0-1.0	FW	0.0 TO 1.0
190	RCC-V-9A	FPC-HX-1A IN ISOL 0-1.0	FW	0.0 TO 1.0
191	RCC-V-9B	FPC-HX-7B IN ISOL 0-1.0	FW	0.0 TO 1.0
192	RCC-V-10A	FPC-HX-1A OUT ISOL VLV OPEN	LB	
193	RCC-V-10B	FPC-HX-1B OUT ISOL VLV OPEN	LB	
194	RCC-V-45A	RWCU-P-1A CL WTR IN ISO 0-1	FW	0.0 TO 1.0
195	RCC-V-105A	TWCU-P-1A CL WT OUT ISO 0-1	FW	0.0 TO 1.0
196	RCC-V-45B	RWCU-P-1B CL WTR IN ISO 0-1	FW	0.0 TO 1.0
197	RCC-V-643A	RWCU-P-1A CLG WTR OUT V	FW	0.0 TO 1.0
198	RCC-V-643B	RWCU-P-1B CLG WTR OUT V	FW	0.0 TO 1.0
199	RCC-V-8	RWCU HX OUT ISOL 0-1.0	FW	0.0 TO 1.0
200	RCIC-V-59	RCIC FLW TST ISO VLV 0-1.0	FW	0.0 TO 1.0
201	RCIC 0/S	RCIC OVERSPEED TRIP RESET	LB	
202	RHR-V-64A	RHR-V-64A BREAKER CLOSED	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
203	RHR-V-64B	RHR-V-64B BREAKER CLOSED	LB	
204	RHR-S70	RHR D/G TEST SW S70 NORMAL	LB	
205	RHR-V-14A	RHR-HX-A SW IN VLV 0-1.0	FW	0.0 TO 1.0
206	RHR-V-14B	RHR-HX-B SW IN VLV 0-1.0	FW	0.0 TO 1.0
207	RHR-V-40	RHR-V-40 MAN OPEN TO 25%	LB	
208	RHR-V-71A	RHR-P-2A SUC LN DRAIN OPEN	LB	
209	RHR-V-72A	RHR-P-2A DISCH LN DRAIN OPE	LB	
210	RIVER-LEVEL	COLUMBIA RIV LVL 20' TO 30'	FW	20' TO 30'
211	RIVER-TEMP	COL RIVER WTW TEMP 33 TO 80	FW	33.0 TO 80.0
212	RPS-MG-A	MG-A OUTPUT BKR RESET	LB	
213	RPS-MG-B	MG-B OUTPUT BKR RESET	LB	
214	RPS ALT BKR	RPS ALT SUPPLY BKR RESET	LB	
215	RPS JUMPER	NON-COIN SCRAM JMP REMOVED	LB	
216	RWCU-V-103	RWCU-V-103 OPEN	LB	
217	RWCU-V-5,13	RWCU-P-1A ISOL VLVS	LB	
218	RWCU-V-5,13	RWCU-P-1B ISOL VLVS	LB	
219	RWCU-V-266A	RWCU-V-266A CONTROL IN AUTO	LB	
220	RWCU-V-266B	RWCU-V-266B CONTROL IN AUTO	LB	
221	RWCU-V-206A	RWCU DEMIN A INLET VLV OPEN	LB	
222	RWCU-V-206B	RWCU DEMIN B INLET VLV OPEN	LB	
223	RWCU-V-266A	AUTO FLOW SETPT V266A 0-300	FW	0.0 TO 300.0
224	RWCU-V-266B	AUTO FLOW SETPT V266B 0-300	FW	0.0 TO 300.0
225	RWCU-V-266A	MAN CONRL VLV 266A POS 0-1.	FW	0.0 TO 1.0
226	RWCU-V-266B	MAN CNTROL VLV 266B POS 0-1.	FW	0.0 TO 1.0
227	RWM SEQUENCE	RWM SEQUENCE B SELECTED	LB	
228	RRC-P-1A	60HZ PWR L/O RLY-A RESET	LB	
229	RRC-P-1B	60HZ PWR L/O RLY-B RESET	LB	
230	LFMG-A	LFMG A LKT RELAY RESET	LB	
231	LFMG-B	LFMG B LKT RELAY RESET	LB	
232	RRC-P-1A	PWR INTLK KEYSW S118 A	LB	
233	RRC-P-1B	PWR INTLK KEY SW S118 B	LB	
234	RRC-P-1A	FW LO FLO KEYSW S119 A	LB	
235	RRC-P-1B	FW LO FLO KEYSW S119 B	LB	
236	RRC-P-1A	LO DT KEYSW S120 A	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
237	RRC-P-1B	LO DT KEYSW S120 B	LB	
238	TG-HSOP	H2 SEAL OIL PUMP ON	LB	
239	TG-ASOP	AIR SIDE SEAL OIL PMP ON	LB	
240	SS-V-43A	SS-PCV-2A BYP VLV SL1 0-1.0	FW	0.0 TO 1.0
241	SS-V-43B	SS-PCV-2B BPY VLV-SL2 0-1.0	FW	0.0 TO 1.0
242	SS-V-49A	SS-PCV-4A BYP VLV-SL3 0-1.0	FW	0.0 TO 1.0
243	SS-V-49B	SS-PCV-4B BYP VLV-SL4 0-1.0	FW	0.0 TO 1.0
244	SS-V-49C	SS-PCV-4C BYP VLV-SL5 0-1.0	FW	0.0 TO 1.0
245	SS-V-49D	SS-PCV-4D BYP VLV-SL6 0-1.0	FW	0.0 TO 1.0
246	SS-V-49E	SS-PCV-4E BYP VLV-SL7 0-1.0	FW	0.0 TO 1.0
247	SS-V-49F	SS-PCV-4F BUP VLV-SL8 0-1.0	FW	0.0 TO 1.0
248	STATOR COOL	STATOR CLG DEMIN IN SERVICE	LB	
249	SCC-P-1A	SCC PMP A OFF=0 SBY=1 RUN=2	IB	0 TO 2
250	SCC-P-1B	SCC PMP B OFF=0 SBY=1 RUN=2	IB	0 TO 2
251	SW-V-71A&B	SPRAY POND XOVER A-B CLOSED	LB	
252	SW-V-72A&B	SPRAY POND XOVER B-A CLOSED	LB	
253	SW-V-179A	SW-A DISH PIPE DR VLV 0-1.0	FW	0.0 TO 1.0
254	SW-V-179B	SW-B DISH PIPE DR VLV 0-1.0	FW	0.0 TO 1.0
255	TMU-POWER	TMU-P-1C PWR SEL BUS 82	LB	
256	TMU-V-5	TMU-LCV-2A ISOL VLV OPEN	LB	
257	TMU-V-9	TMU-LCV-2A BYPASS 0-1.0	FW	0.0 TO 1.0
258	TMU-V-4	TMU S/U LUB WTR SUP VLV OPE	LB	
259	TSW-V-63A	RCC-HX-1A IN VLV 0-1.0	FW	0.0 TO 1.0
260	TSW-V-63B	RCC-HX-1B IN VLV 0-1.0	FW	0.0 TO 1.0
261	TSW-V-63C	RCC-HX-1C IN VLV 0-1.0	FW	0.0 TO 1.0
262	TSW-V-46	TSW-TCV-4 BYP 0-1.0	FW	0.0 TO 1.0
263	TSW-V-21	TSW-TCV-8 BYP 0-1.0	FW	0.0 TO 1.0
264	TSW-V-29	TSW-TCV-9 BYP 0-1.0	FW	0.0 TO 1.0
265	TSW-V-10A	TSW-TCV-14A BYP 0-1.0	FW	0.0 TO 1.0
266	TSW-V-10B	TSW-TCV-14B BYP 0-1.0	FW	0.0 TO 1.0
267	TSW-F-1A	TSW LUBE WTR FLT ON	LB	
268	TSW-F-1B	TSW LUBE WTR FLT ON	LB	
269	TSW-F-2A	CW LUBE WTR FLT ON	LB	
270	TSW-F-2B	CW LUBE WTR FLT ON	LB	

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
271	TSW-V-17A	MN LO CLR A TSW IN ISO 0-1	FW	0.0 TO 1.0
272	TSW-V-17B	MN LO CLR B TSW IN ISO 0-1	FW	0.0 TO 1.0
273	TSW-V-18A	MN LO CLR A TSW OUT ISO 0-1	FW	0.0 TO 1.0
274	TSW-V-18B	MN LO CLR B TSW OUT TSO 0-1	FW	0.0 TO 1.0
275	TSW-V-94A	TSW-F-2A ISOL 0-1.0	FW	0.0 TO 1.0
276	TSW-V-94B	TSW-F-2B ISOL 0-1.0	FW	0.0 TO 1.0
277	TSW-V-78	TSW RTN ISOL-CW BSN 0-1.0	FW	0.0 TO 1.0
278	TSW-V-140A	RFPT A CLR A TSW OUT 0-1.0	FW	0.0 TO 1.0
279	TSW-V-140B	RFPT A CLR B TSW OUT 0-1.0	FW	0.0 TO 1.0
280	TSW-V-140C	RFPT B CLR C TSW OUT 0-1.0	FW	0.0 TO 1.0
281	TSW-V-140D	RFPT B CLR D TSW OUT 0-1.0	FW	0.0 TO 1.0
282	TSW-V-5A	RFPT A OIL CLR A TSW IN 0-1	FW	0.0 TO 1.0
283	TSW-V-5B	RFPT A OIL CLR B TSW IN 0-1	FW	0.0 TO 1.0
284	TSW-V-5C	RFPT A OIL CLR C TSW IN 0-1	FW	0.0 TO 1.0
285	TSW-V-5D	RFPT B OIL CLR D TSW IN 0-1	FW	0.0 TO 1.0
286	TSW-V-13A	CAS-HX-2A CL WT IN ISOL 0-1	FW	0.0 TO 1.0
287	TSW-V-13B	CAS-HX-2B CL WT IN ISOL 0-1	FW	0.0 TO 1.0
288	TSW-V-13C	CAS-HX-2C CL WT IN ISOL 0-1	FW	0.0 TO 1.0
289	TSW-V-15A	CAS-HX-2A CL WT OUT ISO 0-1	FW	0.0 TO 1.0
290	TSW-V-15B	CAS-HX-2B CL WT OUT ISO 0-1	FW	0.0 TO 1.0
291	TSW-V-15C	CAS-HX-2C CL WT OUT ISO 0-1	FW	0.0 TO 1.0
292	TSW-V-110A	CAS-C-1A CLG WTR IN BP CLOS	LB	
293	TSW-V-110B	CAS-C-1B CLG WTR IN BP CLOS	LB	
294	TSW-V-110C	CAS-C-1C CLG WTR IN BP CLOS	LB	
295	TSW-V-23A	DEH OIL CLR A TSW INL 0-1.0	FW	0.0 TO 1.0
296	TSW-V-23B	DEH OIL CLR B TSW INL 0-1.0	FW	0.0 TO 1.0
297	TSW-V-24A	DEH OIL CLR A OUT VLV 0-1.0	FW	0 TO 1.0
298	TSW-V-24B	DEH OIL CLR B OUT VLV 0-1.0	FW	0.0 TO 1.0
299	TSW-V-25A	GEN H2 CLR A TSW INL 0-1.0	FW	0.0 TO 1.0
300	TSW-V-25E	GEN H2 CLR A TSW OUT 0-1.0	FW	0.0 TO 1.0
301	TSW-V-38	AIR SIDE S CLR TSW IN 0-1	FW	0.0 TO 1.0
302	TSW-V-39	H2 SIDE S CLR TSW IN 0-1	FW	0.0 TO 1.0
303	TSW-V-40	AIR SIDE S CLR TSW OUT 0-1	FW	0.0 TO 1.0
304	TSW-V-41	H2 SIDE S CLR TSW OUT 0-1	FW	0.0 TO 1.0

LOA #	PLANT TAG #	DESCRIPTION	TYPE	RANGE
305	TSW-V-42A	BUS DCT CLR A TSW IN 0-1	FW	0.0 TO 1.0
306	TSW-V-42B	BUS DCT CLR B TSW IN 0-1	FW	0.0 TO 1.0
307	TSW-V-43A	BUS DCT CLR A TSW OUT 0-1	FW	0.0 TO 1.0
308	TSW-V-43B	BUS DCT CLR B TSW OUT 0-1	FW	0.0 TO 1.0
309	TSW-V-50A	STTR WTR CLR A TSW IN 0-1	FW	0.0 TO 1.0
310	TSW-V-50B	STTR WTR CLR B TSW IN 0-1	FW	0.0 TO 1.0
311	TSW-V-51A	STTR WTR CLR A TSW OUT 0-1	FW	0.0 TO 1.0
312	TSW-V-51B	STTR WTR CLR B TSW OUT 0-1	FW	0.0 TO 1.0
313	TSW-V-104	TSW STRTUP LUB WTR SUP OPEN	LB	
314	TO-V-62A	RFPT A LO CLR SEL 2A	LB	
315	TO-V-62B	RFPT B LO CLR SEL 2C	LB	
316	TURB OIL HX	MAIN TURB OIL CLR SEL HX-1A	LB	
317	TO-P-2	TO-P-2 CS IN AUTO	LB	
318	HPCS-V-23	HPCS OVERIDE	LB	
319	LPCS-V-12	LPCS OVERIDE	LB	
320	RHR-V-21	RHR C OVERIDE	LB	
321	RHR-V-48A	RHR A OVERIDE	LB	
322	RHR-V-48B	RHR B OVERIDE	LB	
323		PPM 5.5.6 MSIV LOW LVL BYPA	LB	
324		PPM 5.5.12 MSIV BYPASS	LB	
325		PPM 5.5.12 MS DRAIN BYPASS	LB	
326	MS-V-20	EMERG OVERIDE FOR MS-V-20	FW	0.0 TO 1.0
327	LD-RMS-S1B	TEST SW	LB	
328	LD-RMS-S2B	TEST SW	LB	
329	LD-RMS-S3C	TEST SW	LB	
330	LD-RMS-S3D	TEST SW	LB	
331	LD-RMS-S4B	TEST SW	LB	
332	LD-RMS-S5B	TEST SW	LB	
333	MM-F20-F17A	PULL FUSE CRD-V-9/182	LB	
334	CRD-FCV-2A/B	MANUAL LOADER STATION T=MAN	LB	
335	CRD-FCV-2A/B	FCV POSITION FROM MAN LOAD	FW	0.0 TO 100.0

WNP-2 SIMULATOR CERTIFICATION
APPENDIX D
SIMULATOR ACCEPTANCE TESTS

Attachment D-1 ANSI/ANS-3.5 (1985) Requirements Versus Simulator Acceptance Test Procedures
Attachment D-2 Computer Real-Time Test Abstract
Attachment D-3 Normal Plant Evolutions Test Abstracts
Attachment D-4 Steady State Operation Test Abstracts
Attachment D-5 Transient Performance Test Abstracts
Attachment D-6 Plant Malfunction Test Abstracts

WNP-2 SIMULATOR CERTIFICATION

ATTACHMENT D-1

ANSI/ANS-3.5 (1985) REQUIREMENTS

VERSUS

SIMULATOR ACCEPTANCE TEST PROCEDURES

3 General Requirements

3.1 Simulator Capabilities

3.1.1 Normal Plant Evolutions

3.1.1(1) Plant Startup

14.4.7.1 - Normal Plant Operations

3.1.1(2) Nuclear Startup

14.4.7.2.1 - Startup from Hot Shutdown to Rated Pressure

3.1.1(3) Turbine Startup and Gen Synchronization

14.4.7.1 - Normal Plant Operations

3.1.1(4) Reactor SCRAM/Recovery to 100% Power

14.4.7.2.1 - Startup from Hot Shutdown to Rated Pressure

3.1.1(5) Operations at Hot Standby

14.4.7.2.3 - SD to HSD

3.1.1(6) Load Changes

14.4.7.1 - Normal Plant Operations

3.1.1(7) S/U, S/D, Power OPS with 1 Recirc Pump

14.4.7.2.4 - S/U, S/D, Power OPS with 1 Recirc Pump

3.1.1(8) Plant S/D from Rated Power to Cold S/D

14.4.7.1 - Normal Plant Operations

3.1.1(9) Core Performance Testing

14.4.6.1 - Shutdown Margin

14.4.6.2 - Core Reactivity Coefficient Test

14.4.6.5 - SRM/IRM vs. Control Rod Motion

3.1.1(10) Operator Conducted Surveillance Testing (Safety Eq.)

07.04.00.05.06 - EDR, FDR, RRC, MS & RRC Valve Ops

07.04.00.05.13 - Reactor Vx & Trip Valve Operability

07.04.00.05.15 - CIA Valve Operability

07.04.00.05.18 - HPCS Service Water Operability/Demo

07.04.01.03.01.01 - Scram Discharge Volume Vent & Drain Valves Operability

07.04.01.03.01.02 - Control Rod Exercise

07.04.01.04.02.01 - RSCS Operability Prior to Start-Up

07.04.03.01.01.22 - Manual SCRAM Function Test

07.04.03.06.09 - SDV Bypass Rod Block

07.04.03.07.04.01 - Remote Shutdown Panel Channel Check

07.04.03.08.02.01 - Monthly Turbine Valve Tests

07.04.04.02.01.01 - Safety Relief Valve Acoustic Monitor CC

07.04.04.07 - MSIV Closure Test

07.04.05.01.04 - LPCI Flow Path Verification

07.04.05.01.05 - LPCS Valve Lineup/Ads Inhibit CFT

07.04.05.01.06 - HPCS Valve Lineup

07.04.05.01.11 - HPCS System Operability Test

07.04.06.01.04.02A - MSIV Valve Operability

07.04.06.02.02.01 - RHR Valve Position Verification

07.04.06.03.03 - Containment Isolation Valve Operability

07.04.06.04.01.02 - Suppression Chamber-Dry Well Vacuum Breaker Operability

07.04.06.05.02.01 - Reactor Building Ventilation Isolation Valve Operability

07.04.06.05.03.01 - Standby Gas Treatment Operability Test

07.04.06.05.03.04 - Standby Gas Treatment Manual Initiation Bypass Damper & Heater Test

07.04.07.01.01.02 - Standby Service Water Loop B valve Position Verification

07.04.07.01.01.03 - HPCS Service Water Valve Position Verification

07.04.07.09.01 - Weekly Bypass Valves Test

07.04.08.01.01.01.02 - 18 Month Manual & Auto XFR Test, Start-Up to Backup Station Power

07.04.08.01.01.02.01 - Diesel Generator #1 - Operability Test

07.04.08.01.01.02.06 - HPCS Diesel Generator - Loss of Power Test

07.04.08.01.01.02.08 - HPCS Diesel Generator - LOCA Test

07.04.08.01.01.02.11 - Diesel Generator #2 - Operability Test

07.04.08.01.01.02.12 - HPCS Diesel Generator - Operability Test

3.1.2 Plant Malfunctions

3.1.2(1) Loss of Coolant

3.1.2(1)(c) Large and Small Reactor Coolant Breaks

14.4.9.18.3 - Instrument Line Break (Ref)

14.4.9.18.6 - Instrument Line Break (Var)

3.1.2(1)(d) Failure of Safety and Relief Valves

14.4.9.24.27 - Main Steam Safety Relief Valve Fails Open

14.4.9.25.14 - SRV's - Fail Closed

14.4.9.25.14A - SRV-4C Simmering

14.4.10.10 - MSIV ISOL with SRV FO

3.1.2(2)	Loss of Instrument Air
	14.4.9.4.4 - Leak Downstream Control Air Dryer
3.1.2(3)	Loss or Degraded Electrical Power
	14.4.9.8.3A - 4160 Vac Bus Sm-7 Overcurrent
	14.4.9.8.3B - Overcurrent SM-1
	14.4.9.8.4 - S1-2 DC Ground
	14.4.9.8.5 - 6900 Vac Bus SH-6 OL-GND
	14.4.9.8.7 - Loss of All Offsite Power
	14.4.9.8.8 - DG-2 Trip High Diff. Current
	14.4.9.24.15 - S1-1 DC Ground
	14.4.9.24.15A - S1-1 Trip
	14.4.9.24.18 - RPS B MG Set Trip
	14.4.9.24.56 - Battery Charger C1-1 Trip
3.1.2(4)	Loss of Forced Coolant Flow Due to Pump Failure
	14.4.9.24.34 - Recirculation Pump B Trip
	14.4.10.6 - Trip of all Recirculation Pumps
3.1.2(5)	Loss of Cond Vacuum/Loss of Cond Lvl Control
	14.4.9.2.2 - Condenser Air Leak
3.1.2(6)	Loss of Service Wtr or Cooling to Indiv. Comp
	14.4.9.24.5 - SW Pump A Trip
	14.4.9.24.64 - TSW Pump A Trip
	14.4.9.24.64A - TSW Pump B Trip
	14.4.9.25.15 - RCC-P-1A - Trip
3.1.2(7)	Loss of Shutdown Cooling
	14.4.9.24.5 - SW Pump A Trip
	14.4.9.24.A - Loss of RHR SDC due to RHR-P-2B Trip
3.1.2(8)	Loss of Comp Cooling Sys or Cool to Indiv. Comp
	14.4.9.24.5 - SW Pump A Trip
	14.4.9.24.73 - SW-V-2B Fails Closed
	14.4.9.24.64 - TSW Pump A Trip
	14.4.9.24.64A - TSW Pump B Trip
3.1.2(9)	Loss of Normal Feedwater or System Failure
	14.4.9.2.9 - RFPT A Trip
	14.4.9.2.9A - RFPT B Trip
	14.4.9.24.2 - COND-P-2A Trip
	14.4.9.24.48A - COND-P-1A Trip
3.1.2(10)	Loss of All Feedwater (Nor and Emer)
	14.4.10.40 - Loss of Normal and Emergency FW
3.1.2(11)	Loss of Protective System Channel
	14.4.9.16.4 - HPCS Logic Failure

	14.4.9.21.1 - ADS Logic Failure
	14.4.9.24.78 - ATWS/ARI Failure
	14.4.9.24.80 - RPS Fails to SCRAM
	14.4.9.24.80A - RPS Fails to SCRAM (AUTO)
3.1.2(12)	Control Rod Failure
	14.4.9.3.1 - Rod Drift
	14.4.9.3.2 - Stuck Rod
	14.4.9.3.3 - Uncoupled Rod
	14.4.9.3.4 - Single Rod SCRAM
	14.4.9.3.12 - Hydraulic ATWS
3.1.2(13)	Inability to Drive Rods
	14.4.9.3.6 - RDCS Failure
3.1.2(14)	Fuel Cladding Failure
	14.4.9.7.1 - Small Clad Fail
	14.4.9.7.2 - Gross Clad Fail
3.1.2(15)	Turbine Trip
	14.4.9.24.31 - Main Turbine Trip
	14.4.9.24.31A - Main Turbine Trip From LT 30%
3.1.2(16)	Generator Trip
	14.4.9.13.1 - Main Generator Trip
3.1.2(17)	Failure in Auto Cont Sys Affect React/Heat Removal
	14.4.9.23.3 - DEH Press Reg. Output Failure High
	14.4.9.23.3A - DEH Press Reg. Output Fails Low
	14.4.9.24.40 - BPV-1 Failure
	14.4.9.24.40A - BPV-2 Failure
	14.4.9.24.40B - BPV-3 Failure
	14.4.9.24.40C - BPV-4 Failure
3.1.2(19)	Reactor Trip
	14.4.9.24.33 - Manual Scram
3.1.2(20)	Main Steamline/Main Feed Line Breaks
	14.4.9.2.3 - Feed Line Break in DW
	14.4.9.2.8 - FW Rupture in Turbine Bldg.
	14.4.9.21.4A - MS Rupture in DW.
	14.4.9.21.5A MS Rupture in Turbine Bldg.
	14.4.9.21.6 - RCIC Steam Line Break at Turbine
3.1.2(21)	Nuclear Instrumentation Failures
	14.4.9.14.1 - SRM A Failure - Low
	14.4.9.14.2 - APRM Failure
	14.4.9.14.5 - IRM Failure - High
	14.4.9.14.8 - LPRM Failure - Downscale

3.1.2(22) Process Inst, Alarms, Cont Sys Failures

14.4.9.9.4A - RCIC Turbine Trip Due to RCIC-V-8 Closure

14.4.9.9.4B - RCIC Turbine Trip (High Exh. Pressure)

14.4.9.24.43 - Annunciator Failure

14.4.9.24.67B - RFW-L1-606B - Fails Low

14.4.9.24.67C - RFW-L1-606B Fails High

3.1.2(23) Passive Malf in Sys (ESF, Emer Feedwater)

14.4.9.3.10 - Rod Worth Minimizer Fails

14.4.9.9.4C - RCIC Turbine Trip - (Mechanical Overspeed)

14.4.9.24.37A - HPCS-V-4 Fails to Open

14.4.9.25.2 - RHR-P-2B Shaft Shear

14.4.9.25.5 - RHR-P-2A Trip

3.1.2(24) Failure of Auto Reactor Trip System

14.4.9.3.12 - Hydraulic ATWS

14.4.9.24.80 - RPS Fails to SCRAM

14.4.9.24.80A - RPS Fails to SCRAM (AUTO)

14.4.9.25.19 - RPS Spurious Scram A

14.4.9.25.20 - RPS Spurious Scram B

3.1.2(25) Reactor Press Cont Sys Failure (BWR)

14.4.9.23.3 - DEH Press Reg. Output Failure High

14.4.9.23.3A - DEH Press Reg. Output Fails Low

14.4.9.24.27 - Main Steam Safety Relief Valve Fails Open

14.4.9.24.40 - BPV-1 Failure

14.4.9.24.40A - BPV-2 Failure

14.4.9.24.40B - BPV-3 Failure

14.4.9.24.40C - BPV-4 Failure

14.4.9.24.63 - DEH Pump 1A Trip

4 Performance Criteria

4.1 Steady-State Operation

14.4.4.1 - 100% SS Accuracy

14.4.4.2 - 66% SS Accuracy

14.4.4.3 - 40% SS Accuracy

14.4.5.1 - 100% Heat Balance

14.4.5.4 - 100% Mass Balance

APPENDIX A of ANSI/ANS-3.5 Requirements

A3.1 Computer Real Time Test

14.5.4 Computer Real-Time

APPENDIX B of ANSI/ANS.3.5 Requirements

B.1 BWR Simulator Operability Test

B1.1 Steady-State Performance

B1.1(1) Primary Plant

14.4.3.1 - 1 Hour Stability

B1.1(2) Secondary Plant

14.4.3.1 - 1 Hour Stability

B1.2 Transient Performance

B1.2(1) Manual SCRAM

14.4.9.24.33 Manual Scram

B1.2(2) Simultaneous Trip of All Feedwater Pumps

14.4.10.5 - Simultaneous Trip of All RFP's

B1.2(3) Simultaneous Closure of All Main Steam Isolation Valves

14.4.10.3 - Closure of All Main Steam Isolation Valves

B1.2(4) Simultaneous Trip of All Recirculation Pumps

14.4.10.6 - Trip of All Recirculation Pumps

B1.2(5) Single Recirculation Pump Trip

14.4.9.24.34 - Recirculation Pump B Trip

B1.2(6) Main Turbine Trip (No Immediate Reactor SCRAM)

14.4.9.24.31A - Main Turbine Trip from LT 30%

B1.2(7) Maximum Rate Power Ramp (100%-75%-100%)

14.4.8.4 - Power Ramp from 100% PWR to 75% to 100%

B1.2(8) DBA LOCA with Loss of All Off-site Power

14.4.10.7 - Maximum Size Reactor Coolant System Rupture w/Loss of Offsite Power

B1.2(9) DBA Steamline Rupture

14.4.10.9 - Maximum Size Insoluble MSL Rupture

B1.2(10) Simultaneous Closure of All MSIVs with Single Stuck-Open Safety/Relief Valve (Inhibit High Press ECCS)

14.4.10.10 - MSIV ISOL with SRV Failed Open

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT D-2
COMPUTER REAL-TIME TEST ABSTRACT

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Real Time Test TEST No. 14.5.4 REV. 0

TITLE: *REAL TIME TEST PROCEDURE*

OVERVIEW:

This test is designed to provide assurance that the simulator is running with sufficient spare time that it will perform all model calculations in real time. The measurements are taken while the simulator is in RUN and the models are executing. The amount of time consumed by each processor is measured and checked to see if there is any spare time left over. Data is recorded and the totals are calculated and then compared to the maximum allowed time for each frame.

INITIAL CONDITIONS: IC-12 100% power

FINAL CONDITIONS: 100% power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION [illegible]
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT D-3
NORMAL PLANT EVOLUTION TEST ABSTRACTS

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.6.1 REV. 0

TITLE: *CORE PERFORMANCE TESTS - CORE REACTIVITY*

OVERVIEW:

This test was performed to verify simulator response demonstrate the capability to determine the shutdown margin of the reactor core, provide a method of checking for possible reactivity anomalies as the core reactivity changes with exposure per Technical Specification 4.1.2 while in mode 1 and to compare simulator performance against reference plant data in order to determine acceptable accuracy in computing the critical point. The three evaluations described above were tested and verified.

INITIAL CONDITIONS: IC-2 Ready for startup; IC -12 100% Power with Equilbrium Xenon

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	CY4PPM7411
[ ]	ENGINEERING EVALUATION	CY1CYMANREP
[ ]	FSAR	STATEPOINTS
[ ]	SOER / LER	
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.6.2 REV. 0

TITLE: *CORE PERFORMANCE TESTS - CORE REACTIVITYCOEFFICIENTS TEST*

OVERVIEW:

This test was performed to demonstrate that the moderator temperature, void and fuel temperature (doppler) reactivity coefficients approximate reference plant coefficients in order of magnitude. The magnitutdes for the reactivity coefficients were tested and verified.

INITIAL CONDITIONS: IC-2 Ready for startup

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	CY4 CRPATTERN
[ ]	ENGINEERING EVALUATION	ANF PERIOD/REAC
[ ]	FSAR	TIVITY DATA
[ ]	SOER / LER	CY4SAOLETREP
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.6.5 REV. 0

TITLE: *CORE PERFORMANCE TESTS - SRM/IRM REPONSE TO CONTROL ROD MOTION TEST*

OVERVIEW:

This test was performed to demonstrate the proper SRM/IRM response to control rod motion. The SRM's and IRM's adjacent to control rods being withdrawn are verified to respond more dramatically than they do when other control rods are withdrawn. The SRM response includes a verification of the Prompt Jump and subcritical multiplication effects as demonstrated by the associated plots of SRM response. The SRM and IRM response to control rod motion were tested and verified.

INITIAL CONDITIONS: IC-3 Startup in progress approaching criticality.

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.7.1 REV. 0

TITLE: *NORMAL PLANT OPERATIONS*

OVERVIEW:

This test was performed to verify simulator response to a shutdown from rated power conditions to CSD and subsequent startup to rated conditions. The applicable steps of PPM 3.2.1,Normal SD to CSD (Attachment A), PPM 3.1.2 Reactor Plant Cold Startup (Attachment B) and PPM 7.4.4.6.1.1, HU/CD Log (Attachment C) were completed. All applicable steps for PPM 3.2.1 Normal SD to CSD, PPM 3.1.2 Reactor Plant Cold Startup and PPM 7.4.4.6.1.1 HU/CD Log were tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 100% Power Xenon Concentration Increasing to Equilibrium

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	PLANTSD DATASET
[ ]	ENGINEERING EVALUATION	SHUTDOWN.DOC
[ ]	FSAR	STARTUP.DOC
[ ]	SOER / LER	SU99109.DOC
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.7.2.1 REV. 0

TITLE: *PLANT OPERATION TESTS - STARTUP FROM HOT SHUTDOWN TO RATED PRESSURE*

OVERVIEW:

This test was performed to verify simulator response to a startup from the HSD condition at 10 hours after the initial SCRAM from rated power conditions with equilibrium Xenon present. The applicable steps of PPM 3.1.3, SU from HSD (Attachment E, 7.5.1) and PPM 7.4.4.6.1.1, HU/CD Log (Attachment E, 7.5.2) were completed.

INITIAL CONDITIONS: IC-2 - 0% Power Ready for Startup

FINAL CONDITIONS: Reactor Critical, RPV/P Control via MT bypass valves, at Rated Pressure

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.7.2.3 REV. 0

TITLE: *PLANT OPERATION TESTS - SD FROM RATED RPV/P TO HSD*

OVERVIEW:

This test was performed to verify the minimum evolutions that the simulator shall be capable of performing, using only operator action normal to the reference plant for operations at hot standby. The applicable steps of PPM 3.2.2, SD to HSD (Attachment A) and PPM 7.4.4.6.1.1 (Attachment B) were completed.

INITIAL CONDITIONS: IC-14, Shutdown in progress, @14% Power.

FINAL CONDITIONS: Reactor is Shutdown and Plant is in Hot Shutdown.

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	Cycle 6 Shutdown Data
[ ]	ENGINEERING EVALUATION	
[ ]	FSAR	
[ ]	SOER / LER	
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 14.4.7.2.4 REV. 0

TITLE: *STARTUP, SHUTDOWN AND POWER OPERATIONS WITH ONE RRC PUMP*

OVERVIEW:

This test was performed to verify simulator response to a shutdown from rated power conditions to Single RRC Loop conditions, to CSD and subsequent startup to rated conditions for Single Loop Operations. The applicable steps of PPM 3.2.1,Normal SD to CSD (Attachment A), PPM 3.1.2 Reactor Plant Cold Startup (Attachment B), PPM 7.4.4.6.1.1, HU/CD Log (Attachment C), and PPM 2.2.1 RRC System Ops were completed. All applicable steps for PPM 3.2.1 Normal SD to CSD, PPM 3.1.2 Reactor Plant Cold Startup, PPM 2.2.1 RRC System Ops and PPM 7.4.4.6.1.1 HU/CD Log were tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 60% Power Xenon Concentration Increasing to Equilibrium

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	PLANTSD DATASET
[ ]	ENGINEERING EVALUATION	SHUTDOWN.DOC
[ ]	FSAR	STARTUP.DOC
[ ]	SOER / LER	SU99109.DOC
[X]	OPERATIONAL ASSESSMENT	PAT30B

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.00.05.06 REV. 0

TITLE: *EDR, FDR, RRC, MS & RCC VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [X] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.00.05.13 REV. 0

TITLE: *PI-VX & TIP VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.00.05.15 REV. 0

TITLE: *CIA VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [x] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.00.05.18 REV. 0

TITLE: *HPCS SERVICE WATER OPERABILITY DEMONSTRATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The systems capabilities were verified for delivery of required cooling to system loads. Valve stroke timing was taken to verify valve operability. Proper system flow balance was verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.01.03.01.01 REV. 0

TITLE: *SCRAM DISCHARGE VOLUME VENT & DRAIN VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.01.03.01.02 REV. 0

TITLE: *CONTROL ROD EXERCISE*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.01.04.02.01 REV. 0

TITLE: *RSCS OPERABILITY PRIOR TO STARTUP*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. RSCS Operability demonstration performed to ensure proper rod sequence adherence enforced.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.03.01.01.22 REV. 0

TITLE: *MANUAL SCRAM FUNCTIONAL TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less.

FINAL CONDITIONS: Plant operating at 80% power or less.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.03.06.09 REV. 0

TITLE: *SDV BYPASS ROD BLOCK*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. The SDV Bypasss switches functionality was verified.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less.

FINAL CONDITIONS: Plant operating at 80% power or less.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.03.07.04.01 REV. 0

TITLE: *REMOTE SHUTDOWN PANEL CHANNEL CHECK*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures.The RSDP instrumentation was verified.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less.

FINAL CONDITIONS: Plant operating at 80% power or less.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.03.08.02.01 REV. 0

TITLE: *MONTHLY TURBINE VALVE TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures.Proper valve stroking & timing were tested and verified.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less.

FINAL CONDITIONS: Plant operating at 80% power or less.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.04.02.01.01 REV. 0

TITLE: *SRV ACOUSTIC MONITOR CHANNEL CHECK*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Each SRV was operated to verify the detection capability of the tail pipe temperature monitoring and accoustic monitoring systems.

INITIAL CONDITIONS: Plant Operation at GT 25% power.

FINAL CONDITIONS: Plant Operation at GT 25% power.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.04.07 REV. 0

TITLE: *MSIV CLOSURE TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Fast closure stroke times are tested and validated against timing requirements.

INITIAL CONDITIONS: Plant operating at power LE 80%.

FINAL CONDITIONS: Plant operating at power LE 80%.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.05.01.04 REV. 0

TITLE: *LPCI FLOW PATH VERIFICATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

RHR flow testing for various modes of system operation is tested. Valve stroke timing and operability for key parameters was tested.

INITIAL CONDITIONS:

FINAL CONDITIONS:

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.05.01.05 REV. 0

TITLE: *LPCS VALVE LINEUP / ADS INHIBIT CFT*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

LPCS full flow testing, valve stroke timing, and operability for key parameters was tested.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.05.01.06 REV. 0

TITLE: *HPCS VALVE LINEUP*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

HPCS full flow testing is performed. Valve stroke timimg and operability for key parameters was tested.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.05.01.11 REV. 0

TITLE: *HPCS SYSTEM OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

HPCS full flow testing is performed. Valve stroke timimg and operability for key parameters was tested.

INITIAL CONDITIONS: IC-12 100% power, equiliberium Xenon

FINAL CONDITIONS: IC-12 100% power, equiliberium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.01.04.02A REV. 0

TITLE: *MSIV VALVE QUARTERLY OPERABILITY SURVEILLANCE*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

MSIV leakage control is tested to insure its capability for processing leakage past the valve discs.

INITIAL CONDITIONS: Plant shutdown and depressurized.

FINAL CONDITIONS: Plant shutdown and depressurized.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.02.02.01 REV. 0

TITLE: *RHR SYSTEM VALVE POSITION VERIFICATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

RHR flow testing for various modes of system operation is tested. Valve stroke timing and operability for key parameters was tested.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.03.03 REV. 0

TITLE: *CSP & CEP CONTAINMENT ISOLATION VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.04.01.02 REV. 0

TITLE: *SUPRESSION CHAMBER DRY WELL VACUUM BREAKER OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.05.02.01 REV. 0

TITLE: *REACTOR BUILDING ISOLATION VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Valve operability and stroke times were checked and verified to meet procedure requirements.

INITIAL CONDITIONS: Minimize time that the RB HVAC is out of service to prelude system isolations on high temperature.

FINAL CONDITIONS: Minimize time that the RB HVAC is out of service to prelude system isolations on high temperature.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.05.03.01 REV. 0

TITLE: *STANDBY GAS TRTEATMENT SYSTEM OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Valve operability and stroke times were checked and verified to meet procedure requirements.

INITIAL CONDITIONS: Does not impact other plant systems.

FINAL CONDITIONS: System has capacity to meet procedure requirements for a prolonged period of time.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.06.05.03.04 REV. 0

TITLE: *STANDBY GAS TREATMENT SYSTEM / MANUAL INITIATION, BYPASS DAMPER & HEATER TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Valve operability and stroke times were checked and verified to meet procedure requirements.

INITIAL CONDITIONS: Does not impact other plant systems.

FINAL CONDITIONS: System has capacity to meet procedure requirements for a prolonged period of time.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.07.01.01.02 REV. 0

TITLE: *STANDBY SERVICE WATER LOOP B VALVE POSITION VERIFICATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The systems capabilities were verified for delivery of required cooling to system loads. Valve stroke timing was taken to verify operability. Proper system flow balance was verified.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.07.01.01.03 REV. 0

TITLE: *HPCS SERVICE WATER VALVE POSITION VERIFICATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The systems capabilities were verified for delivery of required cooling to system loads. Valve stroke timing was taken to verify operability. Proper system flow balance was verified.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.07.09.01 REV. 0

TITLE: *WEEKLY BY PASS VALVES TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less

FINAL CONDITIONS: Plant operating at 80% power or less

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.01.02 REV 0

TITLE: *18 MONTH MANUAL & AUTO TRANSFER TEST/ STARTUP TO BACKUP STATION POWER*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Breaker alignments were checked and verified for a normal station lineup and auto power seeking transfer tests were conducted to verify correct operability.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.02.01 REV. 0

TITLE: *DG-1 MONTHLY OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test verifies the load carrying capability of the Diesel Generator.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.02.06 REV. 0

TITLE: *HPCS DIESEL GENERATOR - LOSS OF POWER TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test required the diesel to auto start, come up to speed and voltage auto close onto the respective bus, with a prescribed time, with minimum specified drop in voltage and frequency.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.02.08 REV. 0

TITLE: *HPCS DIESEL GENERATOR LOCA TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test demonstrates the DG's ability to auto start, come up to speed and voltage, auto close onto the bus and energize loads within the prescribed limits of time, frequency and voltage.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.02.011 REV. 0

TITLE: *DG-2 MONTHLY OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test verifies the load carrying capability of the Diesel Generator.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Normal Operations TEST No. 07.04.08.01.01.02.012 REV. 0

TITLE: *HPCS DIESEL GENERATOR MONTHLY OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test verifies the load carrying capability of the Diesel Generator.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION

ATTACHMENT D-4

STEADY STATE OPERATION TEST ABSTRACTS

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.4.1 REV. 0

TITLE: *STEADY-STATE ACCURACY TESTS -100 PERCENT POWER AND FLOW, EQ XE*

OVERVIEW:

This test was performed to verify that the computed values of simulated plant parameters at 100 percent power, Equilibrium Xenon correspond to plant parameters, to within the accuracy requirements of ANSI/ANS-3.5-1985, Nuclear Power Plant Simulators for use in Operator Training. Simulator was run for one hour and then data was taken. Critical Parameters monitored included but were not limited to the following categories: RPV LEVEL's, APRM PWR's, GENERATOR LOAD, MN TURB 1ST STAGE PRESS, STEAM FLOW's, FEED FLOW's, RPV PRESS's, CORE FLOW's, RECIRC LOOP FLOW's, DRYWELL PRESS's, DRYWELL TEMP's, SUPPRESSION POOL LVL's, SUPPRESSION POOL TEMP's, CONDENSER VACUUM's, MAIN TURB GOV VLV POS's, MAIN TURB SPEED, RFP SPEED's, RFP PRESS's, and as listed. Values were within specifications or identified for correction.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	100 PWR Jan 22 100 PWR Jan 18
[ ]	ENGINEERING EVALUATION	
[ ]	FSAR	
[ ]	SOER / LER	
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.4.2 REV. 0

TITLE: *STEADY-STATE ACCURACY TESTS - 66 PERCENT POWER*

OVERVIEW:

This test was performed to verify that the computed values of simulated plant parameters at 66 percent power, correspond to plant parameters, to within the accuracy requirements of ANSI/ANS-3.5-1985, Nuclear Power Plant Simulators for use in Operator Training. Simulator power was reduced to 66% allowed to run for one hour and then data was taken. Critical Parameters monitored included but were not limited to the following categories: RPV LEVEL's, APRM PWR's, GENERATOR LOAD, MN TURB 1ST STAGE PRESS, STEAM FLOW's, FEED FLOW's, RPV PRESS's, CORE FLOW's, RECIRC LOOP FLOW's, DRYWELL PRESS's, DRYWELL TEMP's, SUPPRESSION POOL LVL's, SUPPRESSION POOL TEMP's, CONDENSER VACUUM's, MAIN TURB GOV VLV POS's, MAIN TURB SPEED, RFP SPEED's, RFP PRESS's, and others as listed. Values were within specifications or identified for correction.

INITIAL CONDITIONS: IC-12 , Adjusted power to 66%.

FINAL CONDITIONS: 66% Power

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — 66 PWR Mar 1
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.4.3 REV. 0

TITLE: *STEADY-STATE ACCURACY TESTS -40 PERCENT POWER*

OVERVIEW:

This test was performed to verify that the computed values of simulated plant parameters at 40 percent power, correspond to plant parameters, to within the accuracy requirements of ANSI/ANS-3.5-1985, Nuclear Power Plant Simulators for use in Operator Training. Simulator was allowed to run for one hour and then data was taken. Critical Parameters monitored included but were not limited to the following categories: RPV LEVEL's, APRM PWR's, GENERATOR LOAD, MN TURB 1ST STAGE PRESS, STEAM FLOW's, FEED FLOW's, RPV PRESS's, CORE FLOW's, RECIRC LOOP FLOW's, DRYWELL PRESS's, DRYWELL TEMP's, SUPPRESSION POOL LVL's, SUPPRESSION POOL TEMP's, CONDENSER VACUUM's, MAIN TURB GOV VLV POS's, MAIN TURB SPEED, RFP SPEED's, RFP PRESS's, and others as listed. Values were within specifications or identified for correction.

INITIAL CONDITIONS: IC-9 40% Power

FINAL CONDITIONS: 40% Power

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — 40 PWR Apr 20
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.5.1 REV. 0

TITLE: *HEAT AND MASS BALANCE TESTS - 100 PERCENT POWER HEAT BALANCE*

OVERVIEW:

This test was performed to verify that the principal mass and energy balances are satisfied as required by ANSI/ANS-3.5.-1985, Nuclear Power Plant Simulators for Use in Operator Training. Simulator was run for at least thirty minutes and then data was taken. Data was collected and recorded for Attachment A, 100% Heat Balance Control Board Data, and for Attachment B, 100% Heat Balance Computer Point Data. Calculations were performed as indicated in Attachments C,D,E, and F. Data was evaluated against the Acceptance Criteria of section 5.0, as applicable.

NOTE This test should be run with 100% Steady-State Accuracy Test, 14.4.4.1.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.5.4 REV. 0

TITLE: *HEAT AND BALANCE TESTS - 100 PERCENT POWER MASS BALANCE*

OVERVIEW:

This test was performed to evaluate the SIMULATOR MASS BALANCE for a period of one hour. Twenty Plant Performance Parameters IAW Attachment A were set to zero. Reactor level and condenser levels were maintained constant.Proper response of the CST levels was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

FINAL CONDITIONS IC-12 100% Power with Equilibrium Xenon.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Steady State Operation TEST No. 14.4.3.1 REV. 0

TITLE: *INITIAL CONDITION STABILITY TEST*

OVERVIEW:

The Initial Condition Stability Test was performed to verify simulator critical parameters do not vary by more than ± 2% over a period of one hour. Additionally, selected simulator non-critical parameters were verified to not vary by more that, ± 10% over the same one hour period. The Critical and selected Non-Critical parameters were recorded for each minute and plotted for the one hour period.

INITIAL CONDITIONS: IC-12, 100% Power Equilibrium Xenon.

FINAL CONDITIONS: IC-12, 100% Power Equilibrium Xenon.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — 100% PWR DATA
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT D-5
TRANSIENT PERFORMANCE TEST ABSTRACTS

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.9.24.33 REV. 0

TITLE: *MANUAL SCRAM*

OVERVIEW:

This test was performed to demonstrate the functionality of the MANUAL SCRAM Malfunction. Plant responses included: All control rods inserted as indicated by (Full Core Display, RSCS, & PPCRS), RPS (A & B) Scram Group Solenoid lights extinguished, Flow/APRM/Rbm & Rbm/APRM/Flow Status lamps indicated downscale, Lvl Setpoint/Setdown light lit, and CRD-V-(10/180,11/181) closed. The response of multiple (meters, recorders, & devices) was IAW the test procedure correct. Multiple annunciators listed in the test alarmed correctly. Simulator Data Set 9-24-33 was compared to Plant Data Set SCRAM LER 89-35. Proper response on activation of the MANUAL SCRAM malfunction was tested and verified.

INITIAL CONDITIONS: IC-12, Adjusted flow to 67% using FCV's

FINAL CONDITIONS: Reactor Scrammed, BOP shutdown in progress.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — SCRAM LER 89-35
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER — 90-021, 85-016
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.5 REV. 0

TITLE: *SIMULTANEOUS TRIP OF ALL RFP'S*

OVERVIEW:

This test was performed to verify the Simulators response to a simultaneous trip of all RFP's. The RRC FCV runback at RPV/L 4 with coincident RFP trip was verified. Reactor Scram and RRC pump trip to 15 hz was verified at RPV/L 3. The Scram induced RPV/P reduction with Mode Switch in run was verified to cause a MSIV isolation. The subsequent SRV operation with resultant inventory loss and initiation of the RPV/L 2 NS4 isolation, HPCS initiation, RCIC initiation, and RRC pumps tripping to off were verified and evaluated. HPCS-V-4 and RCIC-V-45 closure at RPV/L 8 and subsequent reopening of HPCS-V-4 at RPV/L 2 were verified. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.1 variables were plotted and evaluated at.5 sec resolution as specified. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, NS4 Isolation at RPV/L 2 evaluated in 14.4.9.2.3 RFW Break in DW.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with SRV Operation controlling RPV/P at setpoint and periodic HPCS injection controlling RPV/L between RPV/L 8 and RPV/L 2.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — SCRMLER84.114
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [X] SOER / LER — LER 84-114
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.3 REV. 0

TITLE: *MSIV ISOLATION*

OVERVIEW:

This test was performed to verify the Simulators response to an MSIV Isolation. The MSIV isolation was verified to cause a RPV/P increase and subsequent SRV operation followed by the initiation of HPCS and RCIC at -50 inches. SRV operation at setpoint was verified in conjunction with RCIC-V-45 closure and HPCS-V-4 closure and subsequent cycling closed at RPV/L 8 and reopening at RPV/L 2. The SRV flow decrease was verified as RPV Decay Heat decreased. The relationship between decay heat generation, RPV/P, SRV Flow, HPCS and RCIC flow (at LT saturated conditions) were evaluated. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.1 variables were plotted and evaluated at .5 sec resolution as specified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with SRV Operation controlling RPV/P at setpoint and periodic HPCS injection controlling RPV/L between RPV/L 8 and RPV/L 2.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — SCRMLER88.03
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [X] SOER / LER — LER 88-03
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.6 REV. 0

TITLE: *SIMULTANEOUS TRIP OF ALL RECIRCULATION PUMPS*

OVERVIEW:

This test was performed to verify the Simulators response to a trip of all Recirculation Pumps. Core Power was verified to decrease due to the Core flow reduction to Natural Circulation. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.2 variables were plotted and evaluated at .5 sec resolution as specified.

INITIAL CONDITIONS: IC-10, adjusted to 75% Power, 100% Core Flow.

FINAL CONDITIONS: 25% Power and 25% Core Flow

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PAT 30B
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.9.24.34 REV. 0

TITLE: *RECIRCULATION PUMP B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RECIRCULATION PUMP B TRIP Malfunction. Pump Motor overcurrent due to electrical fault. System responses included: Multiple JP meter response IAW test procedure, RRC B Loop JP flow decreased to zero and then increased as reverse flow, RRC A Loop JP flow increased as RRC B loop entered reverse flow, appropriate annunciators alarmed, and total core flow and core DP decreased as indicated on MS-DPR/FR-613. Reactor power decreased as indicated on IRM/APRM recorders. RPV level increased as indicated on RFW-LR-608. Simulator Data was collected and evaluated as SPVS File 14.4.9.24.34, RRC B PUMP TRIP. Proper response on activation of the Recirculation Pump B Trip malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Plant in Single Loop at reduced power

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PAT30A
- [ ] ENGINEERING EVALUATION — [illegible]
- [X] FSAR — 15.3.1
- [ ] SOER / LER —
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.9.24.31A REV. 0

TITLE: *MAIN TURBINE TRIP FROM LT 30%*

OVERVIEW:

This test was performed to demonstrate the functionality of the MAIN TURBINE TRIP FROM LT 30% malfunction. System responses included: MAIN GENERATOR tripped, MAIN TURBINE tripped, Multiple meter responses on P603, P840, P820, DEH Turbine Control, DEH Valve Test, BWR Control, TG-TR-SMT, and P800 occurred IAW with requirements listed in this test procedure. MT Bypass valves opened to control RPV/P. Multiple annunciators alarmed as listed in this test procedure. The required heater dump valves opened and the required extraction non-return valves closed. The Turbine auxiliaries functioned properly during Turbine coastdown. Simulator Data was collected and evaluated as SPVS File 9-24-31. Proper response on activation of the Main Turbine Trip From LT 30% malfunction was tested and verified.
NOTE: Generator Trip evaluated in 14.4.8.1, Main Generator Trip evaluated in 14.4.9.13.1

INITIAL CONDITIONS: IC-9, Adjusted Power to ~28%.

FINAL CONDITIONS: Main Turbine has tripped, DEH controlling pressure on the Bypasses

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	PLANTSD.DOC
[ ]	ENGINEERING EVALUATION	
[X]	FSAR	15.2.3
[ ]	SOER / LER	
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.8.4 REV. 0

TITLE: *INDUCED TRANSIENT TESTS - POWER RAMP FROM 100 PERCENT POWER TO 75 PERCENT TO 100 PERCENT*

OVERVIEW:

This test was performed to evaluate the tuning of the feedwater system. Using the RRC FCV's power was ramped down from 100 percent to 75 percent in 10 seconds. After stabilizing Rx level, power was ramped from 75 percent to 100 percent in 10 seconds. Proper response of the induced transient was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 100% Power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-124 12/03/84; 84-125 11/27/84
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.7 REV. 0

TITLE: *MAXIMUM SIZE DBA LOCA WITH LOSS OFFSITE POWER*

OVERVIEW:

This test was performed to verify the Simulators response to a Maximum size DBA LOCA with LOP. The DW/P increase initiation of Reactor Scram, NS4 Isolation and RRC FCV lockup were verified. The RRC pump trip to 15 hz via RPV/L 3 signals was verified. The initiation of the RPV/L 2 NS4 isolation, HPCS initiation, RCIC initiation, and RRC pumps tripping to off were verified and evaluated. Div 1 and Div 2 DG's and ECCS initiation were verified. DW/P response and subsequent WW/P response are verifed as the DW/P overcomes downcomer submergence. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.3 variables were plotted and evaluated at .5 sec resolution as specified. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, NS4 Isolation at RPV/L 2 evaluated in 14.4.9.2.3 RFW Break in DW.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/L being controlled GT Two-Thirds Core Height via ECCS Div 1-3 injection. Primary Containment Isolation complete via NS4 isolations.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION ANF LOCA ANALYSIS
- [ ] FSAR _____
- [x] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.9 REV. 0

TITLE: *MAXIMUM SIZE MAIN STEAMLINE RUPTURE*

OVERVIEW:

This test was performed to verify the Simulators response to a Maximum size MSL Break.. The DW/P increase initiation of Reactor Scram, NS4 Isolation and RRC FCV lockup were verified. The RRC pump trip to 15 hz via RPV/L 3 signals was verified. The initiation of the RPV/L 2 NS4 isolation, HPCS initiation, RCIC initiation, and RRC pumps tripping to off were verified and evaluated. Div 3 DG and HPCS initiation were verified. DW/P response and subsequent WW/P response are verifed as the DW/P overcomes downcomer submergence. CBP injection and subsequent RPV/L restoration, with DW cooling via break verified. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.3 variables were plotted and evaluated at .5 sec resolution as specified. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, NS4 Isolation at RPV/L.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/L GT the MSL 110 inches. Primary Containment Isolation complete via NS4 isolations.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.6.5, 6.2.1.1.3.b
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Transients TEST No. 14.4.10.10 REV. 0

TITLE: *MSIV ISOLATION WITH SRV FAILED OPEN (HP ECCS INHIBITED)*

OVERVIEW:

This test was performed to verify the Simulators response to an MSIV Isolation with a SRV failed open. The MSIV isolation with SORV was verified to cause a RPV/P reduction with a subsequent injection by the Condensate Booster Pumps at approximately 630 psig. The SRV flow decrease was verified as RPV/P decreased. The relationship between decay heat generation, RPV/P, SRV Flow, and Condensate Booster Pump flow (at LT saturated conditions) were evaluated. No operator actions were taken as specified in ANS 3.5 Attachment B, item B1.2. ANS 3.5 item B1.2.3 variables were plotted and evaluated at .5 sec resolution as specified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown and depressurized with CBP injection and RPV/L GT the MS lines resulting in liquid flow via the SORV.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — SCRMLER88.03
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [X] SOER / LER — LER 88-03
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT D-6
PLANT MALFUNCTION TEST ABSTRACTS

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.2.2 REV. 0

TITLE: *CONDENSER AIR LEAK*

OVERVIEW:

This test was performed to demonstrate the functionality of the CONDENSER AIRLEAK Malfunction. Metal fatigue causes a crack in the condenser shell. System responses included: Control Room indications showed decreasing main condenser vacuum, off gas flow increased, appropriate annunciators alarmed, and Generator load was decreasing. The TURBINE GENERATOR tripped on low vacuum and caused a reactor SCRAM. As vacuum continued to decrease an NSSSS isolation occurred and the Main Steam isolation valves closed. Proper response on activation of the CONDENSER AIR LEAK malfunction was tested and verified. NOTE:Turbine Trip covered in test 14.4.9.24.31, Reactor Scram evaluated in test 14.4.9.24.33, MSIV Isolation evaluated in test 14.4.10.3

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown, RPV/P control via SRV operation, RPV/L decreaseing towards RPV/L 2.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.2.5
- [x] SOER / LER 84-125
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.2.3 REV. 0

TITLE: *FEEDWATER LINE BREAK IN DRYWELL*

OVERVIEW:

This test was performed to verify the Simulators response to a Feedwater Line Break in the DW upstream of the inboard check valves. The DW/P response was verified to initiate a Reactor Scram with subsequent NS4 and ECCS initiations. The RRC pump trip to 15 hz via RPV/L 3 signals was verified. The isolation of the MSIV's was verified to occur on low RPV/P. The subsequent RPV/P increase was verified to trip the RRC pumps off via ATWS logic. The SRV's were verified to control RPV/P at setpoint. The RFP's were verified to coast down as HP and LP steam sources expended. HPCS-V-4 was verified to auto close at RPV/L 8. Condensate Flow was verified to continue with a subsequen DW/P reduction as FW/T decreased. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, MSIV Isolation details evaluated in 14.4.10.3. Proper Annunciation response was verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/P control via SRV's with the Primary Containment isolation complete. Condensate Flow continuing via the break cooling the DW.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.2.8 REV. 0

TITLE: *FEEDWATER LINE BREAK IN TURBINE BUILDING*

OVERVIEW:

This test was performed to verify the Simulators response to a Feedwater Line Break in the Turbine Building. The RRC pump trip to 15 hz and the Reactor Scram via RPV/L 3 signals was verified. The isolation of the MSIV's was verified to occur on low RPV/P. The Leak Detection system response was verified.The subsequent RPV/P increase was verified to trip the RRC pumps to off via ATWS logic. The SRV's were verified to control RPV/P at setpoint. The Auto initiation of HPCS and RCIC at RPV/L 2 was verified. The NS4 isolatiion at RPV/L 2 was also verified. The closure of HPCS-V-4 and RCIC-V-45 at RPV/L 8 and the subsequent reopening of HPCS-v-4 at RPV/L 2 was verified. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, MSIV Isolation details evaluated in 14.4.10.3. The details of the NS4 isolation were verified in 14.4.9.2.3 FW Line Break in the Dry-well. Proper Annunciation response was verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/P control via SRV's with RPV/L control via HPCS-V-4 cycling open and closed at RPV/L 2 and RPV/L 8 respectively.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.6.6
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.2.9 REV. 0

TITLE: *RFPT A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFPT A TRIP Malfunction. Circuit failure causes RFW-DT-1A trip. System responses included the following alarms: TUR A TRIP, , TUR A CONTR OIL PRESS LOW, and RFW PMP A DISCH FLOW LOW. Reactor water level decreased on all control room instruments and the RPV LEVEL HIGH/LOW ALERT alarmed. A Recirc Flow Control Runback occurred and the Reactor did not Scram. Proper response on activation of the RFPT A TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Recirc Flow Control valves have runback, RFPT B has increased flow to maximum, Reactor is at approx. 68 to 72% Power.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 86-030, 84-079
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.2.9A REV. 0

TITLE: *RFPT B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFPT B TRIP Malfunction. Circuit failure causes RFW-DT-1B trip. System responses included the following alarms: TUR B TRIP, , TUR B CONTR OIL PRESS LOW, and RFW PMP B DISCH FLOW LOW. Reactor water level decreased on all control room instruments and the RPV LEVEL HIGH/LOW ALERT alarmed. A Recirc Flow Control Runback occurred and the Reactor did not Scram. Proper response on activation of the RFPT B TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Recirc Flow Control valves have runback, RFPT A has increased flow to maximum, Reactor is at approx. 68 to 72% Power.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 86-030, 84-079
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.1 REV. 0

TITLE: *ROD DRIFT*

OVERVIEW:

This test was written to demonstrate the functionality of the ROD DRIFT Malfunction. A rod drifts in due to HCU 4 Valve Manifold Failure. System responses included: P603-A7-5-7 ROD DRIFT alarmed, the red Drift light on the full core display illuminated, P603-A7-5-7 ROD DRIFT alarm cleared when the rod is selected, the rod changed position on the four-rod display and the Rod Drift alarm annunciated when the next odd reed switch was activated, LPRM strings indicated a power decrease on the 4 Rod Display, APRM's indicated a slight decrease in power, and the full core display illuminated 00 when the rod reach its final position. Proper response on activation of the ROD DRIFT malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PowerPlex Data
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.2 REV. 0

TITLE: *STUCK ROD*

OVERVIEW:

This test was performed to demonstrate the functionality of the STUCK ROD Malfunction. Air in the insert and withdraw lines of the CRD causes a stuck rod. The rod select matrix switch was illuminated and the blue background was on for the selected rod on the four rod display. The INSERT, WITHDRAW, and SETTLE lights illuminated normally when attempting to withdraw a rod. System responses included: indicated drive flow equaled 2 gpm, rod position remained constant, and rod did not change indicated position on the RDCS Four Rod display. Proper response on activation of the STUCK ROD malfunction was tested and verified.

INITIAL CONDITIONS: IC-3, 1% Power

FINAL CONDITIONS: IC-3, 1% Power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.3 REV. 0

TITLE: *UNCOUPLED ROD*

OVERVIEW:

This test was performed to demonstrate the functionality of the Uncoupled Rod Malfunction. The coupling release handle for the rod becomes mechanically bound and the rod becomes uncoupled. Subsequent control rod withdrawal is initiated resulting in the control rod being withdrawn to the overtravel position. System responses included: Proper response on activation of the STUCK ROD malfunction was tested and verified. Proper Annunciation was verified.

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: IC-5

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.4 REV. 0

TITLE: *SINGLE ROD SCRAM*

OVERVIEW:

This test was performed to demonstrate the functionality of the SINGLE ROD SCRAM Malfunction. Blown fuse causes a single rod SCRAM. System responses included: P603-A7-6-7 ACCUMULATOR TROUBLE alarmed, P603-A7-5-7 ROD DRIFT alarmed, APRM's indicated a decrease in power, the scram light for the rod illuminated on the full core display, the ACCUM light for the rod illuminated on the full core display, and the FULL IN light for the rod illuminated. The RSCS full core display indicated 00 and the four rod display for the affected rod was blank while the malfunction was active. The LPRM strings surrounding the rod showed a noticeable decrease in flux levels. Proper response on activation of the SINGLE ROD SCRAM malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Power is less than 100% and MWE are less than 1150

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PowerPlex Data
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.6 REV. 0

TITLE: *RDCS FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RDCS FAILURE Malfunction. A rod select module generates a channel disagreement. System responses included: P603-A7-2-8 ROD DRIVE CONTROL SYS INOP alarmed, the ACTIVITY CONTROLS DISAGREE light illuminated, the INSERT BLOCK and WITHDRAW BLOCK lights illuminated on Reactor Control Console, and the ROD OUT BLOCK P603-A7-2-7 alarmed. Proper response on activation of the RDCS FAILURE malfunction was tested and verified

INITIAL CONDITIONS: IC-4 Point Of Adding Heat

FINAL CONDITIONS: IC-4 Point Of Adding Heat

SOURCE OF COMPARISON DATA:

- ☐ PLANT DATA SET _____
- ☐ ENGINEERING EVALUATION _____
- ☐ FSAR _____
- ☐ SOER / LER _____
- ☒ OPERATIONAL ASSESSMENT

TEST RESULTS:

- ☐ TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- ☐ TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- ☒ TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.3.12 REV. 0

TITLE: *HYDRAULIC ATWS*

OVERVIEW:

This test was performed to demonstrate the functionality of the HYDRAULIC ATWS Malfunction. Proper response on activation of a Manual SCRAM without Control Rod insertion was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.4.4 REV. 0

TITLE: *LEAK DOWNSTREAM OF CONTROL AIR DRYER*

OVERVIEW:

This test was performed to demonstrate the functionality of the LEAK DOWNSTREAM OF CONTROL AIR DRYER Malfunction. Leak occurs in the control air line between the dryers and the after filters. System responses included: control room indication showed decreasing air pressure, standby air compressors started at 90 psig, applicable annunciators alarmed, service air header isolation valve (SA-PCV-2) shut at 80 psig, SCRAM VALVE PILOT AIR HDR PRESS LOW alarmed at 65 psig, rods started drifting in, and the Reactor SCRAM occurred from SDV/L scram stpt. Significant BOP responses included: condenser water level increased, Feedwater Heater level control valves failed open, Rx bldg. supply and return valves shut, REA and ROA fans tripped, and RB pressure increased. Valves and systems failed IAW Attachment E. Proper system response on activation of the LEAK DOWNSTREAM OF CONTROL AIR DRYER malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor SCRAM with significant systems and valves in loss of air failed positions

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.7.1 REV. 0

TITLE: *CLADDING PERFORATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the CLADDING PERFORATION Malfunction. The fuel rods of numerous fuel bundles experience cladding preformation from PCI. System responses included: radiation levels on log radiation monitors for the main steam lines increased, a 30 second period where nothing else occurs, counts on the off gas pre-treatment monitor increased, radiation level on carbon adsorber vault monitor increased, and the off gas post-treatment recorder increased. Proper response on activation of the CLADDING PERFORATION malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.7.2 REV. 0

TITLE: *GROSS CLAD FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the GROSS CLAD FAILURE Malfunction. An operating condensate filter demin ruptures and resin trap then breaks, resin is injected into the vessel causing clad failure. System responses included: OG-RR-604 off gas pretreatment radiation increased, CONDSR RAD HI-HI alarmed at 1800mr/hr, CONDSR RAD HIGH alarmed at 2300 mr/hr, OFFGAS POST TREAT RAD HIGH alrmed at 1700 cpm, OG-V-45 closed, and OG-V-51A,B,C,D opened. P603-A8-2-4 MSL RAD HIGH TRIP alarmed causing a half SCRAM and half MSL isolation. P603-A7-2-4 MSL RAD HIGH TRIP alarmed causing a half SCRAM and half MSL isolation. With the second MSL RAD HIGH TRIP a RX SCRAM and MSIV isolation occurred. NOTE: Details of the reactor SCRAM detailed in test 14.4.9.24.33,Details of the Turbine Trip are in test 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, OG-V-45 switch in BYPASS and then AUTO. OG-V-51A,B,C,D shut, OG-V-45 is open

FINAL CONDITIONS: Reactor SCRAM and MSIV isolation have occurred

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.3A REV. 0

TITLE: *4160 VAC BUS SM-7 OVERCURRENT*

OVERVIEW:

This test was performed to demonstrate the functionality of the 4160 VAC BUS SM-7 OVERCURRENT - GRND Malfunction. Electrical insulation failure causes a ground and overcurrent on SM-7. System responses included: appropriate annunciators alarmed, bkr 7-1 tripped open and was locked out, bkr B-7 open, 7-DG1 open, (volt and amp) meters on SM-7 and her daughter buses indicated zero readings, DG-1 auto-started and was running unloaded without SW cooling, TSW-P-1B started on low pressure, and RPS bus A half-SCRAM occurred. Proper response to the loss of motive power provided by SM-7 and her daughter busses was tested and verified. Proper response to the loss of control and indication power provided by SM-7 and her daughter busses was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, 1/2 Scram A channel

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.3B REV. 0

TITLE: *OVERCURRENT SM-1*

OVERVIEW:

This test was performed to demonstrate the functionality of the 4160 VAC BUS SM-1 OVERCURRENT Malfunction. Overcurrent& Lockout Condition of Bus SM-1. System responses included: appropriate annunciators alarmed, bkr N1-1 tripped open and was locked out, bkr 1-11 tripped and locked out, bkrs (1-7,7-1,11-1) tripped, (volt and amp) meters on SM-1 indicated zero readings, DG-1 auto-started and was running unloaded, bkr B-7 closed and supplied SM-7. Proper response to the loss of motive power provided by SM-1 was tested and verified. NOTE: LOSS OF BUS SM-7 is evaluated in 14.4.9.8.3.A

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: One third of the Condensate system capacity has been lost and will cause a subsequent reactor SCRAM.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.4 REV. 0

TITLE: *GROUNDED DC BUS - DP-S1-2*

OVERVIEW:

.This test was performed to demonstrate the functionality of the GROUNDED DC BUS - DP S1-2 TRIP Malfunction. Electrical insulation failure causes a ground. System responses included: Appropriate Annunciator alarms, applicable BISI panel alarms, IN-2 shifted to the alternate ac source, ampmeters (AM-B1-2 & AM-C1-2) indicated zero, and VM-S1-2 indicated zero. Proper response to the loss of motive power provided by DP-S1-2was tested and verified for the following loads: RCIC-V-113 and CAC-V- (11,13,15,17). Proper response to the loss of control and indication power provided by DP-S1-2 was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RCIC and CAC systems OOS, numerous indications OOS.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.5 REV. 0

TITLE: *6900 VAC BUS SH-6 OVERCURRENT - GND*

OVERVIEW:

This test was performed to demonstrate the loss of power to Bus SH-6 using malfunction 6900 VAC BUS SH-6 OVERCURRENT - GRND. Proper response to the loss of motive power provided by SH-6 and her daughter busses was tested and verified. Proper response to the loss of control and indication power provided by SH-6 and her daughter busses was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Bus SH-6 has tripped, RRC-P-1B has tripped, Rx is in single loop with final feedflow and steam flow greater than 45%

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.7 REV. 0

TITLE: *LOSS OF ALL OFF- SITE POWER*

OVERVIEW:

This test was performed to demonstrate the functionality of the LOSS OF ALL OFF-SITE POWER Malfunction. A tornado destroys all outside transmission lines to the plant. Simulator was frozen at six seconds for evaluation; system responses included: appropriate annunciators alarmed, multiple A.C. Amp meters indicated zero, multiple A.C. Volt meters indicated zero, the Reactor had scrammed, the Turbine had tripped, the MSIV'S were closed, and the SRV's were controlling pressure. All major electrical breakers tripped opened as listed. Emergency diesels were running unloaded and DC pumps had started. Simulator was restarted and run for twenty sec. Proper response to the loss of motive power provided by all major A.C. Busses and their daughter busses was tested and verified. Proper response to the loss of control and indication power provided by major A.C. Busses and their daughter busses was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed, all major AC Busses de-energized, Vital AC Busses powered by EDG's, pressure controlled by SRV's

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.2.6
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.8.8 REV. 0

TITLE: *DG 2 TRIP - HIGH DIFFERENTIAL CURRENT*

OVERVIEW:

This test was performed to demonstrate the functionality of the DG 2 TRIP - HIGH DIFFERENTIAL CURRENT Malfunction. Defective electrical insulation causes high phase-to-phase differential current. System responses included: appropriate annunciators alarmed, CB-8DG2 tripped, Bkr DG2-8 tripped, and EDG2 control room indications failed to zero. Proper response on activation of High Differential Current on DG2 and attendant loss of power to SM-8 was tested and verified. NOTE: Response to the loss of motive, control, and indication power provided by SM-8 are evaluated in Test No. 14.4.9.8.3 (LOSS OF POWER TO SM-8) and 14.4.9.8.10 (LOSS OF PWR to SL-81).

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: SM-8 is de-energized and a half scram has occurred on RPS-B

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.9.4A REV. 0

TITLE: *RCIC TURBINE TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC TURBINE TRIP DUE TO RCIC-V-8 CLOSURE Malfunction. The RCIC turbine tripped due to RCIC -V-8 failing closed. System responses included: RCIC-V-8 closed, RCIC TURBINE TRIP alarmed, Turbine (speed, exhaust pressure, flow, suction press, and discharge press) decreased, RCIC-V-(1 and 19) indicated closed, RCIC WATER LEG PUMP DISCH PRESSURE LOW, and RCIC LUBE OIL CLR WATER PRESSURE HIGH/LOW annunciators alarmed and cleared. Proper response on activation of the RCIC TURBINE TRIP due to RCIC-V-8 closure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,RCIC placed in Full Flow Test Mode CST to CST

FINAL CONDITIONS: IC-12 100% Power, RCIC TURBINE has tripped.

SOURCE OF COMPARISON DATA:

- ☐ PLANT DATA SET _____
- ☐ ENGINEERING EVALUATION _____
- ☐ FSAR _____
- ☐ SOER / LER _____
- ☒ OPERATIONAL ASSESSMENT

TEST RESULTS:

- ☐ TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- ☒ TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- ☐ TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.9.4B REV. 0

TITLE: *RCIC TURBINE TRIP (HIGH EXHAUST PRESSURE)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC TURBINE TRIP (HIGH EXHAUST PRESSURE) Malfunction. The RCIC turbine tripped due to RCIC -V-40 sticking shut. System responses included: RCIC Exhaust Pressure increased, P601-A4-2-8 EXH PRESS HIGH alarmed, P601-A4-1-5 RCIC TURBINE TRIP alarmed, Turbine (speed, exhaust pressure, flow, and discharge press) decreased, RCIC-V-(1 and 19) indicated closed, RCIC WATER LEG PUMP DISCH PRESSURE LOW, and RCIC LUBE OIL CLR WATER PRESSURE HIGH/LOW annunciators alarmed and cleared. Proper response on activation of the RCIC TURBINE TRIP due to high exhaust pressure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,RCIC placed in Full Flow Test Mode CST to CST

FINAL CONDITIONS: IC-12 100% Power, RCIC TURBINE has tripped.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.9.4C REV. 0

TITLE: *RCIC TURBINE TRIP (MECHANICAL OVERSPEED)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC TURBINE TRIP (MECHANICAL OVERSPEED) Malfunction. The RCIC turbine tripped due to mechanical overspeed. System responses included: P601-A4-1-5 RCIC TURBINE TRIP alarmed, Turbine (speed, exhaust pressure, flow, and discharge press) decreased, RCIC-V-(1 and 19) indicated closed, RCIC WATER LEG PUMP DISCH PRESSURE LOW, and RCIC LUBE OIL CLR WATER PRESSURE HIGH/LOW annunciators alarmed and cleared. Malfunction was deactivated, attempted to open RCIC-V-1, RCIC-V-1 would not open. Proper response on activation of the RCIC TURBINE TRIP due to mechanical overspeed malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,RCIC placed in Full Flow Test Mode CST to CST

FINAL CONDITIONS: IC-12 100% Power, RCIC TURBINE has tripped,and RCIC-V-1 could not be opened from control room.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY Plant Malfunctions TEST No. 14.4.9.13.1 REV. 0

TITLE *MAIN GENERATOR TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the MAIN GENERATOR TRIP Malfunction, The 86 lockout trip is actuated. Alarm responses included: Turbine Throttle Vlv Closure, Turbine Gov Vlv Fast Closure, Scram, Turb Trip Sol Energ, Tg Auto Stop Trip, Unit Primary Lockout Trip, Main Gen Lockout Trip, Main Gen Exciter Field Bkr Trip, and Oscillograph Started. System responses included: Recirc Pumps transferred to LFMG's, TO-P-BOP started, Trip Circuit Available light illuminated, (throttle, governor, reheat stop, and intercept) valves closed, turbine speed decreased, generator output read zero, bypass valves controlled DEH pressure, turbine drains opened, MSR temperature controls shut, (86XU, 86XIU, & 86G)tripped, Generator output bkrs opened, N bkr's opened, S bkr's shut, Generator parameters were sat, non-return valves closed, and dump valves opened. Proper response on activation of the Main Generator Trip malf was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon

FINAL CONDITIONS: Main Generator tripped, Reactor Scrammed.
NOTE: Refer to 14.4.9.24.33 for SCRAM details.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.2.2
- [x] SOER / LER 85-002 ,85-003
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.14.1 REV. 0

TITLE: *SRM A FAILURE - LOW*

OVERVIEW:

This test was performed to demonstrate the functionality of the SRM A FAILURE - LOW Malfunction. Proper response on activation of SRM-A failing low was tested and verified.

INITIAL CONDITIONS: IC-3, 5 Rods from critical

FINAL CONDITIONS: IC-3, 5 Rods from critical

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.14.2 REV. 0

TITLE: *APRM D FAILS UPSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the APRM D FAILS UPSCALE Malfunction. Malfunction in the averaging circuit. Alarm responses included: APRM UPSCALE, APRM BDF UPSCL TRIP or INOP, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM B. APRM D UPSC TR OR INOP and UPSC ALARM lights illuminated on P603. System responses included: APRM D read upscale on IRM-LR-603B, APRM D was upscale on P608, UPSCL (Therm Trip, Alarm, Neut Trip, Neut First) lights illuminated on P608, RPS B logic scram group solenoid lamps extinguished on P603, RPS B SCRAM GP 1-4 solenoid energy. lamps extinguished on P611, and the Backup Scram Valve Solenoid Lights for RPS B logic illuminated. Proper response on activation of APRM D Fails Upscale malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon.

FINAL CONDITIONS: 100% Power, 1/2 SCRAM RPS B

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.14.5 REV. 0

TITLE: *IRM INSTRUMENT FAILURE - HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM INSTR. FAILURE-HIGH Malfunction. IRM output amp shorted. The following annunciators alarmed: IRM ACEG UPSCL TRIP OR INOP, IRM MONITORS UPSCALE, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM A. System responses included: IRM A indicated upscale on IRM-LR-603A, IRM A UPSC TR OR INOP light illuminated, IRM A UPSC ALARM light illuminated P603, IRM A upscale on IRM A drawer, UPSCALE ALARM light illuminated on P606. RPS A logic SCRAM group solenoid lamps extinguished. Backup SCRAM valve solenoid lights for RPS A logic illuminated. Proper response on activation of IRM Instr. Failure - High was tested and verified.

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: Half Scram System A and accompanying alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.14.8 REV. 0

TITLE: *LPRM FAILURE - DOWNSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPRM FAILURE - DOWNSCALE Malfunction. The LPRM flux amplifier fails. System responses included: P603-A8-5-6 LPRM DOWN SCALE alarmed, 24-33a DNSC light illuminated on the full core display, and LPRM% HEAT FLUX meter (bottom rt, A level) indicated downscale when rod 22-35 was selected. Proper response on activation of the LPRM FAILURE - DOWNSCALE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.16.4 REV. 0

TITLE: *HPCS LOGIC FAILURE*

OVERVIEW:

This test was perfomed to demonstrate the functionality of the HPCS LOGIC FAILURE Malfunction. Inadvertent HPCS Initiation. System responses included: P601-A1-1-6 HPCS ACTUATED alarmed, P601-A1-6-1 DIESEL ENGINE RUNNING alarmed., HPCS-P-(1&2) auto started, RPV LEVEL HIGH/LOW ALERT alarmed, RPV INJECTION HPCS-V-4 auto opened, RFW -LIC-600 flow decreased, and RFW-FR-607 developed a flow mismatch. Proper response on activation of the HPCS LOGIC FAILURE Malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power with HPCS injection in progress.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.5.1
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.18.3 REV. 0

TITLE: *INSTRUMENT REFERENCE LINE BREAK D004A (PENX114)*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT REF LINE BREAK D004A (PENX114). Rupture of INST Line between REACTOR and CONDENSATE POT for DOO4A (PENX114). Apparent level increased MS-LIS-100A, P601-A1-2-6 Injection Vlv Closure RPV LEVEL HIGH +54.5" alarmed, and HPCS-V-4 remained shut. Apparent level increased RFW-DPT-4A, RFW-LR-609 and RFW-LI 606A indicated upscale high. REACTOR VESSEL HIGH LEVEL A SEAL light illuminated and RFW/TURBINE RPV LEVEL HIGH TRIP alarm activated. Manual transfer to level control Ch B prevented low level actual scram. Leak was allowed to run and caused drywell pressure to increase. DRYWELL PRESS HIGH/Low Alert alarmed followed by the Drywell Press High Trip. Proper response on activation of INST REF LINE break DOO4A was tested and verified.NOTE: Details of Reactor Scram evaluated in test 14.4.9.24.33, DBA in14.4.9.18.5.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has scrammed on Hi Drywell pressure.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.6.2
- [x] SOER / LER 85-053 08/04/85
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.18.6 REV. 0

TITLE: *INSTRUMENT VARIABLE LEG LINE BREAK x115*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT VARIABLE LEG LINE BREAK x115 Malfunction. System responses included: PI-EFC-X115 changed position from open to closed, apparent loss of level as indicated by MS-LR/PR-623A downscale, HPCS INIT RPV LEVEL LOW -50"alarmed, HPCS system initiated, N4S ISOL RPV LEVEL LOW -50"alarmed, MSIV Half Trip System A, and RC-1 HALF TRIP annunciated. Proper response on activation of the INSTRUMENT VARIABLE LEG LINE BREAK X115 malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, HPCS system Initiated, RC-1 HALF TRIP alarmed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.6.2
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.21.1 REV. 0

TITLE: *ADS LOGIC FAILURE (INADVERTENT INITIATION)*

OVERVIEW:

This test was performed to demonstrate the functionality of the ADS LOGIC FAILURE (INADVERTENT INITIATION) Malfunction. A surveillance being performed results in an advertent initiation of the ADS. System responses included: Applicable annunciator's alarmed, after 105 seconds elapsed time the seven ADS valves indicated open and their respective acoustic monitor alarm lights illuminated, suppression pool temperatures increased, and Reactor pressure decreased rapidly. RPV/L increased due to swell with resultant RPV/L8 Trip of Main Turbine and RFP's which in turned caused a level three Reactor Scram and the RRC pumps to shift to slow speed. Proper response on activation of ADS Logic Failure (Inadvertent Initiation) malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed on lvl three, level two NSSSS isolation occurred and the MSIV'S shut.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.21.4A REV. 0

TITLE: *MAIN STEAM RUPTURE IN DRYWELL*

OVERVIEW:

This test was performed to verify the Simulators response to a Main Steam Line Rupture in the Drywell. The DW/P increase initiation of Reactor Scram, NS4 Isolation and RRC FCV lockup were verified. The RRC pump trip to 15 hz via RPV/L 3 signals was verified. The initiation of the RPV/L 2 NS4 isolation, HPCS initiation, RCIC initiation, and RRC pumps tripping to off were verified and evaluated. Div 3 DG and HPCS initiation were verified. DW/P response and subsequent WW/P response are verifed as the DW/P overcomes downcomer submergence. CBP injection and subsequent RPV/L restoration, with DW cooling via break verified. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, NS4 Isolation at RPV/L 2 evaluated in 14.4.9.2.3 RFW Break in DW. Proper Annunciation response was verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/L GT the MSL 110 inches. Primary Containment Isolation complete via NS4 isolation

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.6.5, 6.2.1.1.3.b
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.21.5A REV. 0

TITLE: *MAIN STEAM RUPTURE IN TURBINE BUILDING*

OVERVIEW:

This test was performed to verify the Simulators response to a Main Steam Line Rupture in the Turbine Building. The RRC pump trip to 15 hz and Reactor Scram initiation via RPV/L 3 signals was verified. The isolation of the MSIV's was verified to occur on low RPV/P. The subsequent RPV/P increase was verified to trip the RRC pumps to off via ATWS logic. The SRV's were verified to control RPV/P at setpoint.. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, MSIV Isolation details evaluated in 14.4.10.3. Proper Annunciation response was verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/P control via SRV's with RPV/L decreasing towards RPV/L 2

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [X] FSAR 15.6.4
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.21.6 REV. 0

TITLE: *RCIC STEAMLINE BREAK AT TURBINE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC STEAMLINE BREAK AT TURBINE Malfunction. RCIC Steam Line break between RCIC-V-8 and RCIC-V-45 valves. System responses included: (RCIC TURBINE TRIP, RCIC STEAM LINE INTEGRITY DP HIGH, RCIC DIV1 OUT OF SERVICE, RCIC TURBINE STEAM SUPPLY PRESS LOW, and others) alarmed, RCIC-V-(8, 63, 1) closed, and Turbine Coasts to a stop. RCIC room radiation levels increased, RCIC room temperatures increased, and Reactor Bldg. Exhaust radiation levels increased with a time delay. Proper response on activation of the RCIC STEAMLINE BREAK AT TURBINE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: RCIC Turbine Tripped, Reactor at 100% Power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.23.3 REV. 0

TITLE: *DEH PRESS REGULATOR OUTPUT FAILURE HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the DEH PRESS REGULATOR OUTPUT FAILURE HIGH Malfunction. Circuit failure cause controller high signal select circuit to fail high. System responses included: governor valves full open, Generator output increased, Bypass valves went full open, and Reactor press decreased rapidly. The following annunciators alarmed: MSL PRESS LOW, MSIV HALF TRIP SYSTEM B, MSIV HALF TRIP SYSTEM A, and MSL ISOL VLVS CLOSURE TRIP. The MSIV's all closed. Proper response on activation of the DEH Press Regulator Output Failure Low was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33 Turbine Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrams on MSIVclosure.

SOURCE OF COMPARISON DATA:

[X]	PLANT DATA SET	PAT 22
[ ]	ENGINEERING EVALUATION	
[X]	FSAR	15.1.3
[ ]	SOER / LER	
[X]	OPERATIONAL ASSESSMENT	

TEST RESULTS:

[ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

[X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES

[ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.23.3A REV. 0

TITLE: *DEH PRESS REGULATOR OUTPUT FAILURE LOW*

OVERVIEW:

This test was performed to demonstrate the functionality of the DEH PRESS REGULATOR OUTPUT FAILURE LOW Malfunction. Circuit failure cause PRESS REGULATOR OUTPUT to go low, due to HSS Circuit internal failure. System responses included: governor valves are full shut,- Turbine/Generator trips off-line, bypass valves are full closed, reactor pressure is increasing, appropriate alarms occur, Rx scrams on high pressure, and SRV's control pressure. Proper response on activatrion of the DEH Press Regulator Output Failure Low was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: REACTOR SCRAMS on either High Pressure or HI APRM Trips.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 85-024
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24A REV. 0

TITLE: *LOSS OF RHR SDC DUE TO RHR-P-2B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the LOSS OF RHR SDC DUE TO RHR-P-2B TRIP Malfunction. The following annunciators alarmed: RHR B PUMP TRIP, RHR B PUMP OVERLOAD RHR B/C PUMP RUNNING, RHR B OOS, and RHR BISI CB-RHR2B OUT OF SERVICE illuminated. Reactor Coolant showed a slow increase in temperature as indicated on RRC-TR-650 & RRC-TRS-601. Proper response on activation of the Loss of SDC Due to RHR-P-2B Trip malfunction was tested and verified.

INITIAL CONDITIONS: IC-1 Cold Shutdown

FINAL CONDITIONS: IC-1 Cold Shutdown

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.2 REV. 0

TITLE: *CONDENSATE BOOSTER PUMP 2A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the CONDENSATE BOOSTER PUMP 2A TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: booster motor amps decreased, appropriate alarms occur, booster pump discharge HDR pressure decreases, RFW pump suction pressure decreases, and RFW pumps trip. Proper response on activation of the CONDENSATE BOOSTER PUMP 2A Trip was tested and verified.NOTE: RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.1

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: RFW pumps have tripped, Reactor has scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 86-024
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.5 REV. 0

TITLE: *SW PUMP A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the SW PUMP A TRIP Malfunction. Electrical fault initiates Motor Overload/Ground. System responses included: Service water flow decreased, SW PMP A MOTOR OL/GND alarmed, applicable Service Water flow annunciators alarmed, and multiple BISI lights illuminated from systems affected by a loss of Service water flow. Proper response on activation of the SW PUMP A TRIP malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.15 REV. 0

TITLE: *S1-1 DC GROUND*

OVERVIEW:

This test was performed to demonstrate the functionality of the S1-1 DC GROUND Malfunction. Ground on Bus S1-1, due to water in the DC control panel. This resulted in a ground annunciator on the bus and deflection on the ground detector meter. The battery charger output amps increased until at 400 amps the charger output fuse blew followed by the battery output fuse and a loss of the bus. System responses included: multiple annunciators, multiple BISI lights illuminated indicating systems out of service, and IN-3 shifted to the alternate A.C. source. AM-B1-1, AM-C1-1, and VM-S1-1 indicated zero. Motive power was lost to the following loads: CAC-V-(2,6,4,8), RCIC-V-(31, 10, 46, 110, 8, 68), RCC-V-6, RHR-V-40, and MS-V-19. Proper response to the loss of Control and Indication power provided by S1-1 was tested and verified

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Bus S1-1 de-energized, IN-3 shifted to alternate A.C. power.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.15A REV. 0

TITLE: *S1-1 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the S1-1 TRIP Malfunction. DC Bus S1-1 Trip. Proper response to the loss of Control and Indication power provided by S1-1 was tested and verified IAW Attachment E.NOTE: All final control board indications and annunciators activated are identical to test 14.4.9.24.15, S1-1 DC GROUND, with the exception of no battery ground annunciator and no ground detection meter deflection.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Bus S1-1 de-energized

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.18 REV. 0

TITLE: *RPS B MG SET TRIP*

OVERVIEW:

.This test was performed to demonstrate the functionality of the RPS B MG SET TRIP Malfunction. RPS-EPA-3B breaker opens. System responses included: Multiple annunciators associated with a total loss of RPS Bus B, Scram Group Solenoid lights for Gps 1,2,3,&4 extinguished, BU Scram amber lights illuminated, RPS Bus B power available light extinguished, and APRM groups B,D, and F indicated downscale. An NSSSS inboard and outboard isolation occurred.; Group's 1,2,4,&7 (inboard and outboard) valves closed and could not be opened, MSIV's remained open (half isolation). Proper response to the loss of control and indication power provided by RPS-PP-001-B was tested and verified IAW attachment E. Proper response on activation of the RPS B MG SET TRIP malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: RPS Bus B de-energized, NSSSS inboard and outboard isolation present.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 87-014
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.27 REV. 0

TITLE: *MAIN STEAM SAFETY RELIEF VALVE FAILS OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the MAIN STEAM SAFETY RELIEF VALVE FAILS OPEN Malfunction. Mechanical setpoint adjustment out of adjustment. System responses included: SRV MS-RV-1A opened, P601-A2-5-8 SRV OPEN, SRV ACCOUSTICAL VALVE MON DRAWER (MS-RV-1A) SRV cards alarmed and the flow card indicated 100 percent flow. Steamline A flow dropped as indicated on RFW-FI-603A. At the DEH panel, Generator Output MW's dropped. An attempt to use the manual control switch for MS-RV-1A had no effect. Proper response on activation of the Main Steam Safety Relief Valve Fails Open malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 100% Power, SRV open, reduced MW's from Generator

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PAT SRVTEST
- [ ] ENGINEERING EVALUATION
- [X] FSAR — 15.1.4
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunctions TEST No. 14.4.9.24.31 REV. 0

TITLE: *MAIN TURBINE TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the MAIN TURBINE TRIP malfunction. Electronic malfunction. System responses included: MAIN GENERATOR tripped, MAIN TURBINE tripped, Reactor Scrammed with RRC Pumps tripping to 15 Hz. Multiple meter responses on P603, P840, P820, DEH Turbine Control, DEH Valve Test, BWR Control, TG-TR-SMT, and P800 occurred IAW with requirements listed in this test procedure. MT Bypass valves and SRV Gp 1 opened to control RPV/P, ATWS/ARI, RPV/P trip initiated. Multiple annunciators alarmed as listed in this test procedure. The required heater dump valves opened and the required extraction non-return valves closed. The Turbine auxiliaries functioned properly during Turbine coastdown. NOTE: Manual Scram evaluated in 14.4.9.24.33, Generator Trip in 14.4.8.1, Main Generator Trip evaluated in 14.4.9.13.1

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has Scrammed, Main turbine has tripped

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [x] FSAR 15.2.3
- [x] SOER / LER 85-002, 01/01/85; 85-003, 01/25/85
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.34 REV. 0

TITLE: *RECIRCULATION PUMP B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RECIRCULATION PUMP B TRIP Malfunction. Pump Motor overcurrent due to electrical fault. System responses included: Multiple JP meter response IAW test procedure, RRC B Loop JP flow decreased to zero and then increased as reverse flow, RRC A Loop JP flow increased as RRC B loop entered reverse flow, appropriate annunciators alarmed, and total core flow and core DP decreased as indicated on MS-DPR/FR-613. Reactor power decreased as indicated on IRM/APRM recorders. RPV level increased as indicated on RFW-LR-608. Simulator Data was collected and evaluated as SPVS File 14.4.9.24.34, RRC B PUMP TRIP. Proper response on activation of the Recirculation Pump B Trip malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Plant in Single Loop at reduced power

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PAT30A
- [ ] ENGINEERING EVALUATION
- [X] FSAR — 15.3.1
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.37A REV. 0

TITLE: *HPCS-V-4 FAILS OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS-V-4 FAILS OPEN Malfunction. Thermal binding results in valve seizure. HPCS system was initiated. Once HPCS-V-4 was open the malfunction was initiated. System response included: HPCS-V-4 did not close after placing manual switch in closed position and it did not close after receiving a close signal on a Reactor high level of 54.5". Proper response on activation of the HPCS-V-4 Fails Open was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.40 REV. 0

TITLE: *TURBINE BYPASS VALVE (BPV-1) FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the TURBINE BYPASS VALVE (BPV-1) FAILURE Malfunction. Thermal binding results in valve seizure. Test was activated by going to BPV MANUAL and depressing the BPV RAISE at the BWR DEH panel on P820. System responses included: BPV TRACK increased, BPV-1 position remained at zero, BPV-(2,3,4) opened, MWE on DEH TURBINE CONTROL decreased, BPV-(2,3,4) open lights energized, and BPV-1 closed light remained energized. The Governor valve additive position decreased and the GV's closed to maintain setpoint pressure.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: BPV's-(2,3,4) are open, BPV-1 is shut, MWE has decreased by approximately 21%.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-056, 84-044, 84-104
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.40A REV. 0

TITLE: *TURBINE BYPASS VALVE (BPV-2) FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the TURBINE BYPASS VALVE (BPV-2) FAILURE Malfunction. Thermal binding results in valve seizure. Test was activated by going to BPV MANUAL and depressing the BPV RAISE at the B.W.R DEH panel on P820. System responses included: BPV TRACK increased, BPV-2 position remained at zero, BPV-(1,3,4) opened, MWE on DEH TURBINE CONTROL decreased, BPV-(1,3,4) open lights energized, and BPV-2 closed light remained energized. The Governor valve additive position decreased and the GV's closed to maintain setpoint pressure. Proper response on activation of Turbine Bypass Valve (BPV-2) Failure was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: BPV's-(1,3,4) are open, BPV-2 is shut, MWE has decreased by approximately 21%.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-056, 84-044 , 84-104
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.40B REV. 0

TITLE: *TURBINE BYPASS VALVE (BPV-3) FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the TURBINE BYPASS VALVE (BPV-3) FAILURE Malfunction. Thermal binding results in valve seizure. Test was activated by going to BPV MANUAL and depressing the BPV RAISE at the B.W.R DEH panel on P820. System responses included: BPV TRACK increased, BPV-3 position remained at zero, BPV-(1,2,4) opened, MWE on DEH TURBINE CONTROL decreased, BPV-(1,2,4) open lights energized, and BPV-3 closed light remained energized. The Governor valve additive position decreased and the GV's closed to maintain setpoint pressure.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: BPV's-(1,2,4) are open, BPV-3 is shut, MWE has decreased by approximately 21%.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-056, 84-044 , 84-104
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.40C REV. 0

TITLE: *TURBINE BYPASS VALVE (BPV-4) FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the TURBINE BYPASS VALVE (BPV-4) FAILURE Malfunction. Thermal binding results in valve seizure. Test was activated by going to BPV MANUAL and depressing the BPV RAISE at the B.W.R DEH panel on P820. System responses included: BPV TRACK increased, BPV-4 position remained at zero, BPV-(1,2,3) opened, MWE on DEH TURBINE CONTROL decreased, BPV-(1,2,3) open lights energized, and BPV-4 closed light remained energized. The Governor valve additive position decreased and the GV's closed to maintain setpoint pressure

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: BPV's-(1,2,3) are open, BPV-4 is shut, MWE has decreased by approximately 21%.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-056, 84-044, 84-104
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES.
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.43 REV. 0

TITLE: *ANNUNCIATOR FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the Annunciator Failure Malfunction. The failure to Annunciate malfunction is initiated with a subsequent system condition establish to initiate the associated Annunciator and its failure to activate was verified. The failure to Annunciate Malfunction was cleared and the False Annunciation malfunction is activated. The Annunciator is verified to activate.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.48A REV. 0

TITLE: *COND-P-1A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the COND-P-1A TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: Cond Pump A motor amps decreased, Cond Pumps B & C amps increased, appropriate alarms occurred, condensate pump discharge header pressure decreased, Booster and RFW pump suction pressures decreased, and RFW pumps tripped. Proper response on activation of the COND-P-1A TRIP was tested and verified. NOTE:RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.1

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: RFW pumps tripped, Reactor has scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.56 REV. 0

TITLE: *BATTERY CHARGER C1-1 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the BATTERY CHARGER C1-1 TRIP Malfunction. Activated spurious breaker trip. System responses included: CHARGER C1-1 TROUBLE alarm, other appropriate alarms, dropping DC voltage, AM-C1-1 indicates zero amps, AM-B1-1 indicates about 100 amps. Proper response on activation of Battery Charger C1-1 Trip was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.63 REV. 0

TITLE: ***DEH PUMP 1A TRIP***

OVERVIEW:

This test was performed to demonstrate the functionality of the DEH PUMP 1A TRIP Malfunction. Spurious breaker trip. System responses included: DEH-P-1A tripped, DEH HDR pressure decreased, appropriate annunciators alarmed, and the standby DEH-P-1B auto started at 1800 psig. Proper response on activation of the DEH-P-1A trip was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Standby DEH-P-1B is running , plant is still at 100% Power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 84-045, 90-021
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.64 REV. 0

TITLE: *TSW PUMP A TRIP*

OVERVIEW:

.This test was performed to demonstrate the functionality of the TSW PUMP A TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: TSW-P-1A motor current increased, TSW-P-1A tripped, appropriate alarms occurred, TSW-P-1B started at less than or equal to 80 psig, TSW-V-53A closes, and TSW-V-53B opens. The following TSW Loads responded as follows: TCV's held temperatures relatively constant, RFP A&B oil cooler outlet temperature increased, Main turbine oil cooler outlet temperature increased, turbine lube oil temperatures increased as indicated on TG-TR-48 and TG-TR-144. Drywell temperature and Containment pressure increased. Proper response on activation of the TSW pump trip was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 100% Power but with higher temperatures on all the loads cooled with TSW

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.64A REV. 0

TITLE: *TSW PUMP B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the TSW PUMP B TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: TSW-P-1B motor current increased, TSW-P-1B tripped, appropriate alarms occurred, TSW-P-1A started at less than or equal to 80 psig, TSW-V-53B closes, and TSW-V-53A opens. The following TSW Loads responded as follows: TCV's held temperatures relatively constant, RFP A&B oil cooler outlet temperature increased, Main turbine oil cooler outlet temperature increased, turbine lube oil temperatures increased as indicated on TG-TR-48 and TG-TR-144. Drywell temperature and Containment pressure increased. Proper response on activation of the TSW pump trip was tested and verified

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: 100% Power but with higher temperatures on all the loads cooled with TSW

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.67B REV. 0

TITLE: *RFW-LI-606B FAILS LOW*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW-LI-606B FAILS LOW Malfunction. Level Sensor C34-N004B Fails low. System responses included: RFW-LI-606B indicated downscale, P603-A8-2-8 RFW TURB Control Signal or Level Channel failure alarmed, and FWC sensor A was automatically selected. The RPV Level Control Channel was manually selected to Channel A and P603-A8-2-8 cleared. Proper response on activation of the RFW-LI-606B FAILS LOW malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 85-016
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.67C REV. 0

TITLE: *RFW-LI-606B FAILS HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW-LI-606B FAILS HIGH Malfunction. Level Sensor C34-N004B Fails high. System responses included: RPV Level HIGH/ LOW ALERT alarmed, RPV high level channel B seal in amber light illuminated, RFW/TURBINE RPV level high Trip alarmed, RFW-LI-606B indicated upscale, and RFW-LR-608 indicated upscale. RFW Level Control System, (RFW-LIC-600, RFW-SC-601A & 601B output demands decreased) causing both RFW Turbines to decrease in speed causing feedwater flow to decrease to less than steam flow and RPV/L to drop. At RPV level 3 a Rx SCRAM occurred. Proper response on activation of the RFW-LI-606B FAILS HIGH malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed on actual low level.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.73 REV. 0

TITLE: *SW-V-2B FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrate the functionality of the SW-V-2B FAILS CLOSED Malfunction. Internal electrical failure in the auto-open logic circuit. RHR-P-2B was started using control switch. System responses included: SW-V-2B PUMP DISCHARGE did not open, SW-P-2B DISCH PRESS SW-PI-2B indicated zero, SW-FI-9B did not increase, and SW-P-2B Amp Ind was less than rated amps for normal operation. Proper response on activation of the SW-V-2B FAILS CLOSED Malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.78 REV. 0

TITLE: *ATWS/ARI FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the ATWS/ARI FAILURE Malfunction. Electrical Malfunction. The ATWS-ARI SYS A&B switches were placed in trip. System responses included: ATWS-ARI TRIP did not alarm, no scram lights were illuminated on the full core display, no rods had moved as indicated on the RSCS full core display, and all of the CRD ARI valves indicated closed. Proper response on activation of the ATWS/ARI FAILURE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.80 REV. 0

TITLE: *RPS FAILS TO SCRAM*

OVERVIEW:

.This test was performed to demonstrate the functionality of the RPS FAILS TO SCRAM Malfunction. The relay armature mechanically seizes. A manual scram was initiated. System alarms that did not initiate included: REACTOR SCRAM A1 AND B1 LOGIC, 1/2 SCRAM SYSTEM A, REACTOR SCRAM A2 AND B2 LOGIC, and 1/2 SCRAM SYSTEM B. All of the SCRAM Group Solenoid lights remained illuminated. The Backup SCRAM lights remained extinguished. The SDV vent and drain valves remained open. Proper response on activation of the RPS FAILS TO SCRAM malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.24.80A REV. 0

TITLE: *RPS FAILS TO SCRAM (AUTO)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS FAILS TO SCRAM (AUTO) Malfunction. The relay armatures mechanically be seizing. A MT Trip was initiated. System alarms that did not initiate included: REACTOR SCRAM A1 AND B1 LOGIC, 1/2 SCRAM SYSTEM A, REACTOR SCRAM A2 AND B2 LOGIC, and 1/2 SCRAM SYSTEM B. The SCRAM Group Solenoid lights remained illuminated. The Backup SCRAM lights remained extinguished. The SDV vent and drain valves remained open. System responses included: MT Bypass valves and SRV OPERATION CONTROLLED RPV/P, RRC Pumps Tripped to 15Hz via RPT TRIP LOGIC, RPV/P HIGH 1037 psig did not initiate REACTOR SCRAM, and an ATWS-ARI TRIP occurred at 1076 psig (causing all rods to scram, vent and drain valves to shut, and reactor to shutdown). Proper response on activation of the RPS FAILS TO SCRAM (AUTO) malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: ATWS-ARI TRIP induced SCRAM at 1076 psig., Reactor is shutdown, Bypasses controlling pressure at setpoint.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunctions TEST No. 14.4.9.25.2 REV. 0

TITLE: *RHR-P-2B SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-2B SHAFT SHEAR Malfunction. RHR-P-2B Shaft Shear break between motor and pump. System responses included: RHR-P-2B motor amps decreased, RHR-P-2B discharge flow decreased, discharge pressure decreased, and appropriate annunciators alarmed. Proper response on activation of RHR-P-2B Shaft Shear was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.5 REV. 0

TITLE: *RHR-P-2A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-2A Malfunction. RHR-P-2A Trip on overload due to electrical fault. System responses included: RHR-P-2A AMPS indicated 0, RHR-P-2A Flow indicator approx 20 on RHR-FI-603A, RHR-P-2A Discharge Pressure indicated approximately 10 on RHR-PI-612A, switch lights indicated pump tripped, and appropriate annunciators alarmed. Proper response on activation of malfunction RHR-P-2A TRIP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RHR-P-2A in Full Flow Test at rated flow.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RHR-P-2A is tripped

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.14 REV. 0

TITLE: *SRV'S - FAIL CLOSED*

OVERVIEW:

This test was performed to demonstrate the functionality of the SRV's FAIL CLOSED Malfunction. SRV'S fail closed due to electrical fault. Malfunction was selected on seven ADS valves. Attempts were then made to open the SRV's: Manually from P601, arming and depressing DIV I ADS push-buttons, keyswitches to open on P628 and P631 none of the SRV's opened. Proper response on activation of the individual of the individual malfunctions was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.14A REV. 0

TITLE: *SRV-4C SIMMERING*

OVERVIEW:

This test was performed to demonstrate the functionality of the SRV-4C SIMMERING Malfunction. Malfunction simulates failure of SRV in such a manner that the valve opens and closes about every 5 seconds, due to mechanical setpoint drift. System responses included: SRV-4C open/close lights cycled every 5 seconds, Acoustic monitor on P851 lit up, appropriate annunciators alarmed. Manually closing SRV-4C Control Switch did not stop the cycling. Proper response on activation of the SRV-4C SIMMERING malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, cycling SRV, MWE small loss and cycling.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.15 REV. 0

TITLE: *RCC-P-1A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCC-P-1A TRIP malfunction. RCC-P-1A Trips on Thermal OL due to electrical fault. System responses included: RCC-P-1A tripped, RCC Pump A Motor OL Trip annunciator alarmed, RCC-P-1C auto started, RCC HDR PRESS RCC-PI-3 decreased and then returned to normal, and RCC-V-6 remained open. Proper response on activation of the RCC-P-1A TRIP malfunction was tested and verifie

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon RCC-P-1A and RCC-P-1B running.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RCC-P-1B and RCC-P-1C running.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.19 REV. 0

TITLE: *RPS SPURIOUS SCRAM A*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SPURIOUS SCRAM A Malfunction. Spurious trip of RPS CH.A DIV I 1/2 SCRAM (due to trip of RPV HIGH PRESS switch). System responses included: RPV PRESS HI trip annunciator alarmed, 1/2 SCRAM SYS A annunciator alarmed, RPS A Logic Groups 1-4 SCRAM lights on panels P603 and P609 extinguished, and backup SCRAM valve Solenoid lights for RPS A and RPS B Logic illuminate. Proper response on activation of the RPS SPURIOUS SCRAM A malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, 1/2 SCRAM ON RPS A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.9.25.20 REV. 0

TITLE: *RPS SPURIOUS SCRAM B*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SPURIOUS SCRAM B Malfunction. Spurious trip of RPS CH.B DIV I 1/2 SCRAM (due to trip of RPV HIGH PRESS switch). System responses included: RPV PRESS HI trip annunciator alarmed, 1/2 SCRAM SYS B annunciator alarmed, RPS B Logic Groups 1-4 SCRAM lights on panels P603 and P611 extinguished, and backup SCRAM valve Solenoid lights for RPS A and RPS B Logic illuminate. Proper response on activation of the RPS SPURIOUS SCRAM B malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,1/2 SCRAM ON RPS B

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Plant Malfunction TEST No. 14.4.10.40 REV. 0

TITLE: *LOSS OF NORMAL AND EMERGENCY FW*

OVERVIEW:

This test was performed to verify the Simulators response to a LOSS OF ALL NORMAL and EMERGENCY FW. The Reactor Scram, NS4 isolation, RRC pump trip, Loss of normal ECCS and RCIC injection sources was verified. RPV/P was verified to increase with the subsequent operation of SRV's to control RPV/P at setpoint following the MSIV isolation. The RPV/L was verified to slowly decrease as the Core is blowndown via SRV operation with no normal or emergency feedwater sources available. SRV operation was verified to diminish as Core Decay heat decreased following the Scram. Note: Scram details evaluated in detail in 14.4.9.24.33, MT Trip details evaluated in 14.4.9.24.31, Main Gen Trip details evaluated in 14.4.9.13.1, NS4 Isolation at RPV/L 2 evaluated in 14.4.9.2.3 RFW Break in DW.

INITIAL CONDITIONS: IC-12 100% Power Equilibrium Xenon

FINAL CONDITIONS: Reactor Shutdown with RPV/P being controlled at setpoint via SRV operation resulting in the core slowly blowing down to the Suppression Pool.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION
APPENDIX E
TRAINING MALFUNCTION TESTS

Attachment E-1 Training Malfunction Test List
Attachment E-2 Training Malfunction Test Abstracts

WNP-2 SIMULATOR CERTIFICATION
ATTACHMENT E-1
ADDITIONAL TRAINING MALFUNCTION TESTS

07.04.00.05.07 - RHR, HPCS, LPCS, RCIC, PI-EFCX-Valve Operability/Shutdown
07.04.00.05.09 - RWCU, RRC, RCC, RFW Valve Operability/Shutdown
07.04.00.05.14 - CAC Valve Operability
07.04.00.05.16 - Standby Service Water Loop A Operability/Demo
07.04.00.05.17 - Standby Water Service Loop B Operability/Demo
07.04.03.07.05.01 - Accident Monitoring Instrumentation - Channel Check
07.04.04.01.02 - Jet Pump Operability
07.04.05.01.07 - LPCS System Operability Test
07.04.05.01.08 - RHR Loop A Operability Test
07.04.05.01.10 - RHR Loop C Operability Test
07.04.07.01.01.01 - Standby Service Water Loop A Valve Position Verification
07.04.07.03.03A - RCIC Operability Test <150#
07.04.08.01.01.02.05C - Standby Diesel Generator DG2 - Loss of Power Test
07.04.08.01.01.02.13 - HPCS Diesel Generator - Semi-Annual
07.04.08.03.02 - AC/DC Weekly Breaker Alignment
14.4.9.2.1 - Condenser Tube Leak
14.4.9.2.9B - RFW Turb A - Loss of Control Signal
14.4.9.3.7 - RSCS Failure
14.4.9.3.9 - Rod Position Indication Failure (Present Reed Switch)
14.4.9.3.9A - Rod Position Indication Failure (Odd Reed Switch)
14.4.9.3.10 - Rod Worth Minimizer Fails
14.4.9.3.11 - HCU Accumulator Trouble
14.4.9.8.1 - DG-1 Trip After Auto Start & Supplying SM-7
14.4.9.8.1A - HPCS Trip After Autostart
14.4.9.8.3 - 4160 Vac Bus SM-8 OL-GND
14.4.9.8.3C - Overcurrent SM-3
14.4.9.8.4A - DP-S1-2 Trip
14.4.9.8.6 - Lockout TRS
14.4.9.8.6A - TR-N1 Lockout
14.4.9.8.6B - TR-N2 Lockout
14.4.9.8.6C - TR-M Lockout
14.4.9.8.6D - TR-B Lockout
14.4.9.8.8A - DG-1 Trip High Diff. Current
14.4.9.8.8B - HPCS-DG Trip High Diff. Current
14.4.9.8.8C - Output Bkr DG1/7 Fails to Auto Close

14.4.9.8.8D - Output Bkr DG2/8 Fails to Auto Close
14.4.9.8.8E - DG-2 HI Vibration
14.4.9.8.10 - 480 Vac Bus SL-81 OL-GND
14.4.9.9.4 - RCIC Turbine Trip
14.4.9.9.4D - RCIC Fail to Trip on HI Exh Press
14.4.9.9.4E - RCIC DIV 1 Isol Failure
14.4.9.9.7 - RHR A Supp. Pool Suct. Line Break
14.4.9.14.1A - SRM A Fails High
14.4.9.14.2A - APRM A Fails INOP
14.4.9.14.2B - APRM C Fails INOP
14.4.9.14.2C - APRM D Fails INOP
14.4.9.14.5A - IRM A - Fails Downscale
14.4.9.14.5B - IRM B - Fails Upscale
14.4.9.14.5C - IRM F - Fails Upscale
14.4.9.14.5D - IRM A - Fails INOP
14.4.9.14.5E - IRM E Erratic Operation
14.4.9.16.1 - RPS Scram Group Fuses Blown
14.4.9.16.1A - RPS Scram Group Fuses Blown
14.4.9.16.1B - RPS Scram Group Fuses Blown
14.4.9.16.1C - RPS Scram Group Fuses Blown
14.4.9.17.1 - RWCU Leak in Suction Line
14.4.9.17.2A - Leak in RWCU DW Suct Line (W/I PCN)
14.4.9.17.2B - RWCU Demin B Plugged
14.4.9.18.2 - Jet Pump Failure
14.4.9.18.3A - Instrument Ref. Line Break D004B
14.4.9.18.3B - Instrument Ref. Line Break D004C
14.4.9.18.3C - Instrument Ref. Line Break D004D
14.4.9.18.4 - Recirculation Pump Seal Failure
14.4.9.18.6B - Instrument Variable Leg Line Break
14.4.9.18.6C - Instrument Variable Leg Line Break
14.4.9.18.6D - Instrument Variable Leg Line Break
14.4.9.18.8 - HI Recirculation Pump A Vibration
14.4.9.18.8A - HI Recirculation Pump B Vibration
14.4.9.24.2A - COND-P-2B Trip
14.4.9.24.2B - COND-P-2C Trip
14.4.9.24.4 - CRD A Pump Trip
14.4.9.24.4A - CRD B Pump Trip
14.4.9.24.13 - 480 Vac MCC Trip
14.4.9.24.18A - RPS A MG Set Trip
14.4.9.24.23 - RHR A Pump Shaft Shear

14.4.9.24.34A - Recirculation Pump A Trip
14.4.9.24.36 - RHR-V-42B Fails Closed
14.4.9.24.37 - HPCS-V-4 Fails As Is
14.4.9.24.37B - HPCS-V-4 Fails to Auto Open
14.4.9.24.38 - LPCS-V-5 Fails Closed
14.4.9.24.44 - LPCS-P-2 Shaft Shear
14.4.9.24.44A - LPCS-P-2 Trip
14.4.9.24.45 - RHR-P-3 Shaft Shear
14.4.9.24.47 - HPCS Waterleg Pump Shaft Shear (P-3)
14.4.9.24.48 - COND-P-1B Trip
14.4.9.24.48B - COND-P-1C Trip
14.4.9.24.49 - Master FWLC Fails High
14.4.9.24.54 - C1-7 Battery Charger Trip
14.4.9.24.54A - CO-1A Charger Trip & Batt. BO-1A Discharge
14.4.9.24.54B - C2-1 Charger Trip & B2-1 Discharge
14.4.9.24.57 - H2-Side SO Pump Trip
14.4.9.24.58 - Air-Side SO Pump Trip
14.4.9.24.59 - Shaft-Driven LO Pump Failure
14.4.9.24.60 - CRD-FCV-2 Fails Closed
14.4.9.24.63A - DEH Pump 1B Trip
14.4.9.24.67A - RFW-LI-606A Fails As Is
14.4.9.24.67D - RFW-LI-606C Fails High
14.4.9.24.68 - RCIC-V-63 Fails Open
14.4.9.24.69 - RCIC-V-8 Fails Open
14.4.9.24.72 - SLC-P-1B Fails to Start
14.4.9.24.85A - MS-V-22A - Fails to Close
14.4.9.24.85B - MS-V-28A - Fails to Close
14.4.9.24.85C - MS-V-28B - Fails to Close
14.4.9.24.85D - MSIV's - Fails to Close
14.4.9.24.85E - MS-V-22B - Fails to Close
14.4.9.24.85F - MS-V-22C - Fails to Close
14.4.9.24.85G - MS-V-28C - Fails to Close
14.4.9.24.85H - MS-V-28C Inadvertent Slow Closure
14.4.9.24.85I - MS-V-28D Inadvertent Slow Closure
14.4.9.24.85J - MS-V-28B Inadvertent Slow Closure
14.4.9.25.1 - LPCS-P-1 Shaft Shear
14.4.9.25.1A - LPCS-P-1 Trip
14.4.9.25.3 - RHR-P-2C Shaft Shear
14.4.9.25.4 - HPCS-P-1 Shaft Shear
14.4.9.25.6 - RHR-V-42B Fails Closed

14.4.9.25.7 - RHR-V-42V Fails Closed
14.4.9.25.8 - RHR-P-2B Trip
14.4.9.25.9 - RHR-P-2C Trip
14.4.9.25.10 - HPCS-P-1 Trip
14.4.9.25.11 - RHR-V-16A, 16B, 17A, 17B, Fails Closed
14.4.9.25.12 - RCIC-V-13 Fails to Open
14.4.9.25.13 - RCIC-V-45 Fails Closed
14.4.9.25.15A - RCC-P-1B Trip
14.4.9.25.15B - RCC-P-1C Trip
14.4.9.25.16 - MC-8B Trip
14.4.9.25.18 - ARM/Process Monitor Failures
14.4.9.25.21 - LPRM Fails Upscale
14.4.9.25.22 - RHR-V-42A Fails Closed
14.4.9.25.23 - CAS-C-1A Loss of Cooling
14.4.9.25.24 - TG HP Rotor High Vibration
14.4.9.25.25 - Generator Hydrogen Pressure Control Failure
14.4.9.25.26 - RBM CH.A Fails Upscale
14.4.9.25.27 - RPV NR Level Recorder Pen Sticks
14.4.9.25.28 - HI Oxygen In Containment
14.4.9.25.29 - FWH 1A Tube Rupture
14.4.9.25.30 - RFW Turbines HI Vibration
14.4.9.25.31 - 5A FWH Loss of Ext. Stm
14.4.9.25.32 - 6A FWH Loss of Ext. Stm
14.4.9.25.33 - RFW-LCV-10 Controller Output Fails Low
14.4.9.25.33A - PWLC SU Level Control Fails Low
14.4.9.25.35 - Loss of Press Suppression Function
14.4.9.25.36 - RWCU Leak In Equipment Area
14.4.9.25.37 - HI Hydrogen In Containment
14.4.9.25.38 - BKR S1 Failure to Auto Close
14.4.9.25.39 - S2-1 DC Ground
14.4.9.25.40 - RRC Loop A HPU Fuse TH5 Fails
14.4.9.25.41 - RRC-P-1B 60 Hz Breaker Fails to Trip

WNP-2 SIMULATOR CERTIFICATION

ATTACHMENT E-2

TRAINING MALFUNCTION TESTS ABSTRACTS

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.00.05.07 REV. 0

TITLE: *RHR,HPCS,LPCS,RCIC, PI-EFCX & TIP VALVE OPERABILITY - SHUTDOWN*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.00.05.09 REV. 0

TITLE: *RWCU,RRC,RCC & RFW VALVE OPERABILITY - SHUTDOWN*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.00.05.14 REV. 0

TITLE: *CAC VALVE OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.00.05.16 REV. 0

TITLE: *STANDBY SERVICE WATER LOOP A OPERABILITY DEMONSTRATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The systems capabilities were verified for delivery of required cooling to system loads. Valve stroke timing was taken to verify valve operability. Proper system flow balance was verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.00.05.17 REV. 0

TITLE: *STANDBY SERVICE WATER LOOP B OPERABILITY DEMONSTRATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The systems capabilities were verified for delivery of required cooling to system loads. Valve stroke timing was taken to verify valve operability. Proper system flow balance was verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [X] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.03.07.05.01 REV. 0

TITLE: *ACCIDENT MONITORS INSTRUMENT CHANNEL CHECK*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures.The functionality of the Accident Monitoring Instrumentation was demonstrated.

This stroking of all turbine steam valves was conducted to verify valve operability.

INITIAL CONDITIONS: Plant operating at 80% power or less.

FINAL CONDITIONS: Plant operating at 80% power or less.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.04.01.02 REV. 0

TITLE: *JET PUMP OPERABILITY*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures.Proper valve stroking & timing were tested and verified.

This test verifies that the loop flows and jet pump flows meet the comparison requirements to prove jet pump integrity.

INITIAL CONDITIONS: Plant operating at 25% power.

FINAL CONDITIONS: Plant operating at 25% power.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.05.01.07 REV. 0

TITLE: *LPCS SYSTEM OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

HPCS full flow testing is performed. Valve stroke timimg and operability for key parameters was tested.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.05.01.08 REV. 0

TITLE: *RHR LOOP A OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

RHR flow testing for various modes of system operation is tested. Valve stroke timing and operability for key parameters was tested.

INITIAL CONDITIONS: N / A

FINAL CONDITIONS: N / A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [X] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.05.01.10 REV. 0

TITLE: *RHR LOOP C OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

RHR flow testing for various modes of system operation is tested. Valve stroke timing and operability for key parameters was tested.

INITIAL CONDITIONS: IC-12 100% power, equiliberium Xenon

FINAL CONDITIONS: IC-12 100% power, equiliberium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.07.01.01.01 REV. 0

TITLE: *STANDBY SERVICE WATER LOOP A VALVE POSITION VERIFICATION*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

INITIAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

FINAL CONDITIONS: In accordance with the testing requirements of the specific Surveillance.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.07.03.03A REV. 0

TITLE: *RCIC OPERABILITY PRIOR TO 150 psig.*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

The system was operated in the flow test mode to verify system flow and discharge pressure for both conditions. A quick start was also performed at rated pressure with parameters verified to be within requirements.

INITIAL CONDITIONS: 1. Rated Pressure
2. 150 # Pressurizing

FINAL CONDITIONS: 1. Rated Pressure
2. 150 # Pressurizing , some small amount of heat from RCIC.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.08.01.01.02.05C REV. 0

TITLE: *DIESEL GENERATOR # 2- LOSS OF POWER TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test required the diesel to auto start, come up to speed and voltage auto close onto the respective bus, with a prescribed time, with minimum specified drop in voltage and frequency.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RÉSULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.08.01.01.02.013 REV. 0

TITLE: *HPCS DIESEL GENERATOR SEMI-ANNUAL OPERABILITY TEST*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

This test verifies the load carrying capability of the Diesel Generator.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 07.04.08.03.02 REV. 0

TITLE: *AC/DC WEEKLEY BREAKER ALIGNMENT*

OVERVIEW:

This test was performed to demonstrate Simulator System Operability in accordance with approved Plant Surveillance Procedures. Proper valve stroking & timing were tested and verified.

Breaker alignments were checked and verified for a normal station lineup and auto power seeking transfer tests were conducted to verify correct operability.

INITIAL CONDITIONS: N/A

FINAL CONDITIONS: N/A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [x] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [ ] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.2.1 REV. 0

TITLE: *CONDENSER TUBE LEAK*

OVERVIEW:

This test was performed to demonstrate the functionality of the CONDENSER TUBE LEAK Malfunction. Corrosion causes condenser tube leak. System responses included: Conductivity recorder COND-CR-1 indicated an increase in conductivity on some of the points, 1 thru 14, P840-A3-6.5 MAIN CONDSR CONDUCT HIGH alarmed at GE 9 micromhos, conductivity recorders RWCU-CR-601 and RWCU-CR-603 showed an increasing conductivity trend, and FILTER DEMIN INFLUENT and EFFLUENT annunciators alarmed. Proper response on activation of the CONDENSER TUBE LEAK malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 84-083
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.2.9B REV. 0

TITLE: *RFW TURBINE A - LOSS OF CONTROL SIGNAL*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW TURBINE A LOSS OF CONTROL SIGNAL Malfunction. Circuit failure results in Loss of Control Signal to RFW TURB A. System responses included: RFW-DT-1A LOSS OF CONTROL SIGNAL amber light illuminates and P603-A8-2.8 RFW TURB CONTROL SIGNAL FAIL/ or LEVEL CH FAIL alarmed. REACTOR POWER was reduced to 90% with the following system responses: RFW TURB A SPEED and DISCH PRESSURE did not change, RFW-SC-601A output did not change, RFW-SC-601B output decreased with the decrease on RFW-LIC-600, and RFW/T B SPEED and DISCH PRESS decreased with the power decrease. Proper response on activation of RFW TURBINE A LOSS OF CONTROL SIGNAL malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 90% Power with RFW TURB A at constant speed and RFW TURB B at a slower speed controlling feed flow.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.3.7 REV. 0

TITLE: *RSCS BYPASS*

OVERVIEW:

This test was performed to demonstrate the functionality of the RSCS BYPASS Malfunction. The RSCS is completely BYPASSED using EOP 5.5.11 (installing a jumper). Inserting a Control Rod not in the selected group, system responses included: did not initiate an insert block, Rod Block indication benchboard did not illuminate, and LPSP LED on Rod Sequence Controller illuminated. Proper response on activation of the RSCS BYPASS malfunction was tested and verified.

INITIAL CONDITIONS: IC-7 HEATUP AT 850#

FINAL CONDITIONS: IC-7 HEATUP AT 850#

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.3.9 REV. 0

TITLE: *ROD POSITION INDICATION FAILURE (PRESENT REED SWITCH)*

OVERVIEW:

This test was performed to demonstrate the functionality of the PRESENT REED SW FAILS TO OPEN malfunction. Proper response in the form of withdraw and insert blocks were tested and verified. The rod position indication was verified lost for the selected ROD on the four rod display.

INITIAL CONDITIONS: IC-7 HEATUP AT 850#

FINAL CONDITIONS: IC-7 HEATUP AT 850#

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.3.9A REV. 0

TITLE: *ROD POSITION INDICATION FAILURE (ODD REED SWITCH)*

OVERVIEW:

This test was performed to demonstrate the functionality of the NEXT REED SW FAILS TO CLOSE malfunction. Proper response in the form of withdraw and insert blocks were tested and verified. The rod position indication was verified lost for the selected ROD on the four rod display.

INITIAL CONDITIONS: IC-7 HEATUP AT 850#

FINAL CONDITIONS: IC-7 HEATUP AT 850#

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.3.10 REV. 0

TITLE: *ROD WORTH MINIMIZER FAILS*

OVERVIEW:

This test was performed to demonstrate the functionality of the ROD WORTH MINIMIZER FAILS Malfunction. A parity check error causes the RWM to go INOP. System responses included: P603-A7-2.7 ROD OUT BLOCK alarmed, INSERT BLOCK and WITHDRAWN BLOCK lights illuminated on the (Reactor Control Console and on RWM Console). Proper response on activation of the Rod Worth Minimizer Fails malfunction was tested and verified.

INITIAL CONDITIONS: IC-7 HEAT UP @ 850#

FINAL CONDITIONS: IC-7 HEAT UP @ 850#

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.3.11 REV. 0

TITLE: ***HCU ACCUMULATOR TROUBLE***

OVERVIEW:

This test was performed to demonstrate the functionality of the ROD 22-03 ACCUM malfunction. Proper response to low accumulator pressure was tested for multiple locations and verified correct.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [x] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.1 REV. 0

TITLE: *DG-1 TRIP AFTER AUTO START AND SUPPLYING SM-7*

OVERVIEW:

This test was performed to demonstrate the functionality of the DG-1 TRIP AFTER AUTO START and SUPPLYING SM-7 Malfunction. Clogged fuel lines cause trip. Bkr CB-7/1 was opened, system responses included: DG-1 auto started and carried SM-7 for thirty seconds, DG-1 then tripped, SM-7 Voltage and Amp meters dropped to zero. Annunciators P800-C1-(DG-1 BKR 7DG1 TRIP, BUS 7 UV 69% INSTANT TRIP, BUS 7 UV 87% DELAY TRIP, DG-1 LOCAL PANEL ALARM, BUS 75 UNDERVOLTAGE) alarmed. Proper response on activation of DG-1 TRIP after auto start malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: SM-7 de-energized, 1/2 Scram on A system.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.1A REV. 0

TITLE: *HPCS TRIP AFTER AUTO START AND SUPPLYING SM-4*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS TRIP AFTER AUTO START and SUPPLYING SM-4 Malfunction. Clogged fuel lines cause trip. Bkr CB 4-2 was opened, system responses included: HPCS auto started and carried SM-4 for thirty seconds,HPCS DG then tripped, SM-4 Voltage and Amp meters dropped to zero. Annunciators P601-A1- (HPCS SYSTEM UNDERVOLTAGE, DIESEL ENGINE TRIP, DG LOCAL PANEL ALARM, 480 V SYSTEM UNDERVOLTAGE, HPCS WATERLEG PUMP DISCH PRESS LOW, & HPCS OUT OF SERVICE) alarmed. Proper response on activation of HPCS TRIP after auto start malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: SM-4 de-energized, 100% Power

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.3 REV. 0

TITLE: *4160 VAC BUS SM-8 OVERCURRENT - GRND*

OVERVIEW:

This test was performed to demonstrate the functionality of the 4160 VAC BUS SM-8 OVERCURRENT - GRND Malfunction. Electrical insulation failure causes a ground and overcurrent on SM-8. System responses included: appropriate annunciators alarmed, bkr 8-3 tripped open and was locked out, bkr B-8 open, 8-DG2 open, (volt and amp) meters on SM-8 and her daughter buses indicated zero readings, DG-2 auto-started and was running unloaded without SW cooling, TSW-P-1A started on low pressure, RPS bus B half-SCRAM occurred, and with only RCC-P-1A running RCC heat loads increased in temperature. Proper response to the loss of motive power provided by SM-8 and her daughter busses was tested and verified. Proper response to the loss of control and indication power provided by SM-8 and her daughter busses was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, 1/2 Scram B channel of RPS

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.3C REV. 0

TITLE: *OVERCURRENT SM-3*

OVERVIEW:

This test was performed to demonstrate the functionality of the 4160 VAC BUS SM-3 OVERCURRENT Malfunction. Overcurrent & Lockout Condition of Bus SM-3 system responses included: appropriate annunciators alarmed, bkr N1-3 tripped open and was locked out, bkr 3-31 tripped and locked out, bkrs (3-8,8-3,31-3) tripped, (volt and amp) meters on SM-3 indicated zero readings, bkr 31-21 auto-closed to energize SL-31, DG-2 auto-started and was running unloaded, bkr B-8 closed and supplied SM-8. Proper response to the loss of motive power provided by SM-3 was tested and verified.

NOTE: LOSS OF BUS SM-8 is evaluated in 14.4.9.8.3.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: One third of the Condensate system capacity has been lost and will cause a subsequent reactor SCRAM.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.4A REV. 0

TITLE: *SP-S1-2 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the DP S1-2 TRIP Malfunction. Battery B1-2 OOS with disconnect switch open simultaneous with Battery Charger C1-2 failure. System responses included: Appropriate Annunciator alarms, applicable BISI panel alarms, IN-2 shifted to the alternate ac source, ampmeters (AM-B1-2 & AM-C1-2) indicated zero, and VM-S1-2 indicated zero. Proper response to the loss of motive power provided by DP-S1-2was tested and verified for the following loads: RCIC-V-113 and CAC-V- (11,13,15,17). Proper response to the loss of control and indication power provided by DP-S1-2 was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RCIC and CAC systems OOS, numerous indications OOS.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES.
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.6 REV. 0

TITLE: *TRANSFORMER LOCKOUT TR-S*

OVERVIEW:

This test was performed to demonstrate the functionality of the TRANSFROMER LOCKOUT TR-S Malfunction. 86TS actuates on phase differential current. XFMR TR-S LOCKOUT TRIP alarmed and simulator was frozen at T=6 sec. System responses included: appropriate alarms, multiple (amp & volt) meters indicated zero, and wattmeters WM-TR-S-(X,Y) indicated zero. The following breakers opened: 500 KV bkrs, N bkrs, Tie bkrs (1-7, 2-4, 4-2, and 3-8), 2 sec later 7-1 and 8-3, Tie bkrs (1-11, 2-21, and 3-31), and Tie bkrs (75-72 and 85-82). Bkrs B-7 & B-8 closed and RCC-P-1A and RCC-P-1B restarted. AT least one TR-S differential phase relay tripped. Proper response to the loss of motive, control, and indication power was tested and verified or identified as previously tested and verified. Simulator was returned to run: EDG-(1&2) ran unloaded and EDG-3 energized SM-4.

INITIAL CONDITIONS: IC-8, 20% Power

FINAL CONDITIONS: Major Electrical Busses de-energized, Reactor Scrammed.

SOURCE OF COMPARISON DATA:

☐	PLANT DATA SET		
☐	ENGINEERING EVALUATION		
☐	FSAR		
☒	SOER / LER	87-018 89-002	6/26/87 1/30/89
☒	OPERATIONAL ASSESSMENT		

TEST RESULTS:

☐ TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES

☒ TEST RESULTS SATISFACTORY WITH DISCREPANCIES

☐ TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.6A REV. 0

TITLE: *TR-N1 LOCKOUT*

OVERVIEW:

This test was performed to demonstrate the functionality of the TR-N1 LOCKOUT Malfunction. System responses included: XFMR TR-N1 LOCKOUT TRIP annunciated and Unit Primary Lockout (86XU) and 86X1U actuated. System responses included: Turbine Trip (20 AST), all N Supply Bkrs Tripped & Locked out, Supply Bkrs Closed, 500 KV Bkrs Tripped, Exciter field Circuit Bkr Tripped, and Oscillograph started. Normal XFMR TR-(N1 & N2) Power meters read zero. Relay, 86TN1 Tripped, Flag #3, and white light extinguished. Proper response on activation of the TR-N1 LOCK-OUT malfunction was tested and verified.

NOTE: Main TG Trip evaluated in 14.4.9.13.1
Main Gen Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12, 100% Power

FINAL CONDITIONS: Turbine Tripped, Reactor Scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.6B REV. 0

TITLE: *TR-N2 LOCKOUT*

OVERVIEW:

This test was performed to demonstrate the functionality of the TR-N2 LOCKOUT Malfunction. System responses included: XFMR TR-N2 LOCKOUT TRIP annunciated and Unit Primary Lockout (86XU) and 86X1U actuated. System responses included: Turbine Trip (20 AST), all N Supply Bkrs Tripped & Locked out, Supply Bkrs Closed, 500 KV Bkrs Tripped & Lockout, Exciter field Circuit Bkr Tripped, and Oscillograph started. Normal XFMR TR-(N1 & N2) Power meters read zero. Relay, 86TN2 Tripped, Flag #3, and white light extinguished. Proper response on activation of the TR-N2 LOCKOUT malfunction was tested and verified.

NOTE: Main TG Trip evaluated in 14.4.9.13.1
Main Gen Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12, 100% Power

FINAL CONDITIONS: Main Generator Tripped, Reactor Scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.6C REV. 0

TITLE: *TR-M LOCKOUT*

OVERVIEW:

This test was performed to demonstrate the functionality of the TR-M LOCKOUT Malfunction. MAIN XFMR BANK LOCKOUT TRIP annunciated and Unit Primary Lockout (86XU) and 86XIU actuated. System responses included: Turbine Trip (20AST), all N Supply Bkrs Tripped and Locked out, Supply Bkrs Closed, 500 KV Bkrs Tripped, Exciter field Circuit Bkr Tripped, and Oscillograph started. TR-M Lockout Relay, 86TM, tripped and white light extinguished. Proper response on activation of the TR-M LOCKOUT malfunction was tested and verified.
NOTE: Main TG Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12, 100% Power

FINAL CONDITIONS: Main Generator Tripped, Reactor Scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.6D REV. 0

TITLE: *TR-B LOCKOUT*

OVERVIEW:

This test was performed to demonstrate the functionality of the TR-B-LOCKOUT Malfunction. TR-B LOCKOUT on sudden pressure. XFMR TR-B LOCKOUT TRIP and XFMR TR-B UNDER VOLATAGE annunciated. BKRs (B7&B8) tripped and BACKUP XFMR BKR (B7, B8) TRIP annunciators alarmed. DG-1 started and closed in on SM-7. DG-2 started and closed in on SM-8. Appropriate annunciators alarmed and Oscillograph started. The following meters read zero: TR-B MEGAWATTS, TR-B KILOAMPS (OA,OB,OC), and BUS (7, 8) BACKUP FEEDER KVOLTS. TR-B Lockout Relay, 86TB Tripped and the white light extinguished. Proper response on activation of the TR-B LOCKOUT malfunction was tested and verified.

NOTE: DG response and closure on to Bus 7 & 8 is covered in 14.4.9.8.7

INITIAL CONDITIONS: IC-12, 100% Power

FINAL CONDITIONS: Reactor has Scrammed, Main Generator Tripped.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.8A REV. 0

TITLE: *DG 1 TRIP - HIGH DIFFERENTIAL CURRENT*

OVERVIEW:

This test was performed to demonstrate the functionality of the DG 1 TRIP - HIGH DIFFERENTIAL CURRENT Malfunction. Defective electrical insulation causes high phase-to-phase differential current. System responses included: appropriate annunciators alarmed, CB-7DG1 tripped, Bkr DG1-7 tripped, and EDG1 control room indications failed to zero. Proper response on activation of High Differential Current on DG1 and attendant loss of power to SM-7 was tested and verified.

NOTE: Response to the loss of motive, control, and indication power provided by SM-7 are evaluated in Test No. 14.4.9.8.3A (LOSS OF POWER TO SM-7).

INITIAL CONDITIONS: IC-12 100% Power and Flow with Equilibrium Xenon

FINAL CONDITIONS: SM-7 is de-energized and a half scram has occurred on RPS-A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.8B REV. 0

TITLE: *HPCS DG TRIP-HIGH DIFFERENTIAL CURRENT*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS DG TRIP- HIGH DIFFERENTIAL CURRENT Malfunction. System responses included: P601-A1-3.3 DIESEL ENGINE TRIP alarmed, Bkr CB-4DG3 tripped, P601-A1-5.2 HPCS GENERATOR OVERCURRENT alarmed, READY FOR AUTOSTART light over the Diesel Control Switch extinguished, and EDG3 control room indications failed to zero. Proper response on activation of High Differential Current on HPCS DG malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power and Flow with Equilibrium Xenon

FINAL CONDITIONS: SM-4 is de-energized.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.8C REV 0

TITLE: *DIESEL GENERATOR OUTPUT BREAKER DG1/7 FAILS TO AUTO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the DIESEL GENERATOR OUTPUT BKR DG1/7 FAILS TO AUTO CLOSE Malfunction. Breaker DG1/7 fails to auto close when Diesel is started & tries to load BUS 7. After BKR CB-7/1 was tripped, system responses included: DG-1 started, annunciators (BUS 7 LOSS OF VOLTAGE and BUS 7 DEGRADED VOLTAGE) alarmed, BUS 7 (volt and amp) meters read zero, and DG1/7 did not auto close. CB-DG1-7 sync. selector switch was placed in normal and DG1/7 was manually shut. BUS 7 (volt and amp) indication indicated normal readings. Proper response on activation of the DG OUTPUT BKR DG1/7 FAILS TO AUTO CLOSE malfunction was tested and verified.

INITIAL CONDITIONS: IC-8 20% Power Ready for Synchronization, Bkr CB-B/7 in PTL to prevent TR-B from loading BUS 7.

FINAL CONDITIONS: DG1 was manually paralleled to SM-7.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.8D REV. 0

TITLE: *DIESEL GENERATOR OUTPUT BREAKER DG2/8 FAILS TO AUTO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the DIESEL GENERATOR OUTPUT BKR DG2/8 FAILS TO AUTO CLOSE Malfunction. Breaker DG2/8 fails to auto close when Diesel is started & tries to load BUS 8. After BKR CB-8/2 was tripped, system responses included: DG-2 started, annunciators (BUS 8 LOSS OF VOLTAGE and BUS 8 DEGRADED VOLTAGE) alarmed, BUS 8 (volt and amp) meters read zero, and DG2/8 did not auto close. CB-DG2-8 sync. selector switch was placed in normal and DG2/8 was manually shut. BUS 8 (volt and amp) indication indicated normal readings. Proper response on activation of the DG OUTPUT BKR DG2/8 FAILS TO AUTO CLOSE malfunction was tested and verified.

INITIAL CONDITIONS: IC-8 20% Power Ready for Synchronization, Bkr CB-B/8 in PTL to prevent TR-B from loading BUS 8.

FINAL CONDITIONS: DG-2 was manually paralleled to SM-8.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.8.8E REV. 0

TITLE: *DG-2 HI VIBERATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the DG-2 HI VIBRATION Malfunction. Mechanical fault induces DG-2 HI Vibration. System responses included: DG-2 VIB HI, P800-C5-4-1, and DG-2 LOCAL PNL ALARM, P800-C5-3-1, annunciators alarmed. Proper response on activation of the DG-2 HI VIBRATION malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, DG-2 started

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, DG-2 started

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.8.10 REV. 0

TITLE: *480 VAC BUS SL-81 OVERCURRENT - GRND*

OVERVIEW:

This test was performed to demonstrate the loss of power to Bus SL-81 using malfunction 480 VAC BUS SL-81 OVERCURRENT -GRND. Proper response to the loss of motive power provided by SL-81 and her daughter busses where tested and verified. Proper response to the loss of control and indication power provided by SL-81 and her daughter busses where tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon.

FINAL CONDITIONS: RWCU sys is off line, RCC temperatures throughout the plant are increasing, and drywell pressure is slowly increasing.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.9.4 REV. 0

TITLE: *RCIC TURBINE TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC TURBINE TRIP Malfunction. The RCIC turbine trips on electrical overspeed due to misalignment of the overspeed sensor circuit. System responses included: RCIC TURBINE TRIP alarmed, Turbine (speed, exhaust pressure, flow, suction press, and discharge press) decreased, RCIC-V- (1 and 19) indicated closed, RCIC WATER LEG PUMP DISCH PRESSURE LOW, and RCIC LUBE OIL CLR WATER PRESSURE HIGH/LOW annunciators alarmed. Proper response on activation of the RCIC TURBINE TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RCIC placed in Full Flow Test Mode CST to CST

FINAL CONDITIONS: IC-12 100% Power, RCIC TURBINE has tripped.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [X] SOER / LER 84-082
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.9.4D REV. 0

TITLE: *RCIC FAIL TO TRIP ON HI EXH PRESS*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC FAIL TO TRIP ON HI EXH PRESS Malfunction. TURBINE EXH PRESS TRIP RELAY FAILURE inhibits the HI EXH PRESS TRIP. RCIC-V-68 EXHAUST KEYLOCK SWITCH was placed to closed, system responses included: RCIC EXHAUST PRESSURE increased as indicated on RCIC-PI-603, RCIC TURBINE did not trip on HIGH EXHAUST PRESSURE, at 150 psig 1st RUPTURE DISC BLOWS initiating RCIC ISOLATION and TRIP, and appropriate annunciators alarmed. Proper response on activation of the RCIC FAIL TO TRIP ON HI EXH PRESS malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RCIC placed in Full Flow Test Mode CST to CST.

FINAL CONDITIONS: IC-12 100% Power, RCIC TURBINE has tripped due to RUPTURE DISC blowing.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.9.4E REV. 0

TITLE: *RCIC DIV 1 ISOL FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC DIV I ISOL FAILURE Malfunction. RCIC K-15 RELAY (DIV 1 ISOL) mechanically jammed prevents DIV 1 ISOL and TURB TRIP. System responses included: RCIC-V-63 auto closed, applicable annunciators alarmed, RCIC -V-8 failed to close, RCIC did not trip, RCIC-V-1 and RCIC-V-2 remain open, RCIC STEAM LINE PRESS decreased on RCIC-PI-602, RCIC SYS FLOW coasted down from 600 gpm to zero, RCIC-PI-601 decreased from rated to LT or less than keep fill pressure, and RCIC-SI-2 SPEED decreased from rated to zero. Proper response on activation of the RCIC DIV I ISOL FAILURE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, RCIC in Full Flow Test to CST.

FINAL CONDITIONS: IC-12 100% Power, RCIC coasted to zero speed without proper isolation.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Test TEST No. 14.4.9.9.7 REV. 0

TITLE: *RHR A SUPPRESSION POOL SUCTION LINE BREAK*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR A SUPPRESSION POOL SUCTION LINE BREAK Malfunction. A break occurs in RHR-P-2A Suction Line just upstream of pump. System responses included: RHR A (flow and pressure) decreased, RHR A motor amps became erratic, P601-A3-2-7 LEAK DET REACTOR BLDG Floor Sump R2 Leakage High alarmed, P602-A13-2-1 REACTOR BLDG Floor Sump R1 Level Hi-Hi alarmed, and Suppression pool level decreased significantly with time. RHR A Pump Room Water Level High, SUPP POOL LEVEL HIGH/LOW, RHR A PUMP DISCH PRESS HIGH/LOW, and RHR A PUMP TRIP annunciated. Sump Pump Out Timer FDR-TM-604A alarmed with indication of run time equal to STPT. Proper response on activation of RHR A Suppression Pool Suction Line Break was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.1A REV. 0

TITLE: *SRM A FAILS - HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the SRM A FAILURE - HIGH Malfunction. Proper response on activation of SRM-A failing high was tested and verified.

INITIAL CONDITIONS: IC-3, 5 Rods from critical

FINAL CONDITIONS: IC-3, 5 Rods from critical

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.2A REV. 0

TITLE: *APRM A FAILS INOP*

OVERVIEW:

This test was performed to demonstrate the functionality of the APRM A FAILS INOP Malfunction. Malfunction in the count circuit with the output failing to zero. Alarm responses included: APRM UPSCALE, APRM ACE UPSCL TRIP or INOP, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM A. APRM A UPSC TR OR INOP ALARM light illuminated on P603. System responses included: RPS A logic scram group solenoid lamps extinguished on P603, RPS A SCRAM GP 1-4 solenoid energ. lamps extinguished on P609, and the Backup Scram Valve Solenoid Lights for RPS A logic illuminated. Proper response on activation of APRM A Fails INOP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, 1/2 SCRAM RPS A

SOURCE OF COMPARISON DATA:

- ☐ PLANT DATA SET _____
- ☐ ENGINEERING EVALUATION _____
- ☐ FSAR _____
- ☐ SOER / LER _____
- ☒ OPERATIONAL ASSESSMENT

TEST RESULTS:

- ☐ TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- ☐ TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- ☒ TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.2B REV. 0

TITLE: *APRM C FAILS INOP*

OVERVIEW:

This test was performed to demonstrate the functionality of the APRM C FAILS INOP Malfunction. Malfunction in the count circuit with the output failing to zero. Alarm responses included: APRM ACE UPSCL TRIP or INOP, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM A. APRM C UPSC TR OR INOP ALARM light illuminated on P603. System responses included: RPS A logic scram group solenoid lamps extinguished on P603, RPS A SCRAM GP 1-4 solenoid energy lamps extinguished on P609, and the Backup Scram Valve Solenoid Lights for RPS A logic illuminated on P603 & P609. Proper response on activation of APRM C Fails INOP malfunction was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, 1/2 SCRAM RPS A

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.2C REV. 0

TITLE: *APRM D FAILS INOP*

OVERVIEW:

This test was performed to demonstrate the functionality of the APRM D FAILS INOP Malfunction. Malfunction in the count circuit with the output failing to zero. Alarm responses included: APRM BDF UPSCL TRIP or INOP, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM B. APRM D UPSC TR OR INOP ALARM light illuminated on P603. System responses included: RPS B logic scram group solenoid lamps extinguished on P603, RPS B SCRAM GP 1-4 solenoid energ. lamps extinguished on P611, and the Backup Scram Valve Solenoid Lights for RPS B logic illuminated. Proper response on activation of APRM D Fails INOP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, 1/2 SCRAM RPS B

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.5A REV. 0

TITLE: *IRM A FAILS DOWNSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM A FAILS DOWNSCALE Malfunction. Proper response on activation of IRM A failing downscale was tested and verified.

INITIAL CONDITIONS: IC-5, following POAH with IRM's on RG 8 or RG 9

FINAL CONDITIONS: IC-5, following POAH with IRM's on RG 8 or RG 9

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.5B REV. 0

TITLE: *IRM C FAILS UPSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM C FAILS UPSCALE Malfunction. IRM output amp failure. The following annunciators alarmed: IRM ACEG UPSCL TRIP OR INOP, IRM MONITORS UPSCALE, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM A. System responses included: IRM C indicated upscale on IRM-LR-603C, IRM C UPSC TR OR INOP light illuminated, IRM C UPSC ALARM light illuminated P603, IRM C upscale on IRM C drawer, (UPSCALE ALARM light and UPSC Trip light) illuminated on P606. RPS A logic SCRAM group solenoid lamps extinguished. Backup SCRAM valve solenoid lights for RPS A logic illuminated. Proper response on activation of IRM C failing upscale was tested and verified.

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: IC-5, Half Scram System A and accompanying alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.5C REV. 0

TITLE: *IRM F FAILS UPSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM F FAILS UPSCALE Malfunction. IRM output amp shorted. The following annunciators alarmed: IRM BDFH UPSCL TRIP OR INOP, IRM MONITORS UPSCALE, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM B. System responses included: IRM F indicated upscale on IRM-LR-603D, IRM F UPSC TR OR INOP light illuminated, IRM F UPSC ALARM light illuminated P603, (UPSCALE ALARM light and UPSC Trip light) illuminated on P606. RPS B logic SCRAM group solenoid lamps extinguished. Backup SCRAM valve solenoid lights for RPS B logic illuminated. Proper response on activation of IRM F failing upscale was tested and verified.

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: IC-5, Half Scram System B and accompanying alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.5D REV. 0

TITLE: *IRM A FAILS INOP*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM A FAILS INOP Malfunction. IRM fails resulting in LO HV PWR SUPPLY VOLTAGE. The following annunciators alarmed: IRM ACEG UPSCL TRIP OR INOP A, ROD OUT BLOCK, NEUTRON MONITOR SYSTEM TRIP, and 1/2 SCRAM SYSTEM A. System responses included: IRM A indicated downscale on IRM-LR-603C, IRM A UPSC TR OR INOP light illuminated. RPS A logic SCRAM group solenoid lamps extinguished. Backup SCRAM valve solenoid lights for RPS A logic illuminated. Proper response on activation of IRM A failing Inop was tested and verified

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: IC-5, Half Scram System A and accompanying alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.14.5E REV. 0

TITLE: *IRM E ERRATIC OPERATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the IRM E ERRATIC OPERATION Malfunction. Proper response on activation of IRM E failing erratic was tested and verified.

INITIAL CONDITIONS: IC-5

FINAL CONDITIONS: IC-5

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.16.1 REV. 0

TITLE: *RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 2 & CH B GROUP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 2 & CH B GROUP 2) Malfunction. Proper response of the Group 2 Control Rods listed on Attachment 7.1 including the Full Core Display Accumulator Lights and the Blue Scram lights were tested and verified. Proper response of the Group 2 solenoid lights for RPS A and RPS B were tested and verified. Simulator placed in FREEZE shortly after initiating the malfunction to inhibit a SDV/L High trip which would mask the results of the blown fuses.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Group two rods have scrammed, Reactor power has been reduced significantly.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.16.1A REV. 0

TITLE: *RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 1 & CH B GROUP 1)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 1& CH B GROUP 1) Malfunction. Proper response of the Group 1 Control Rods listed on Attachment 7.1 including the Full Core Display Accumulator Lights and the Blue Scram lights were tested and verified. Proper response of the Group 1 solenoid lights for RPS A and RPS B were tested and verified.Simulator placed in FREEZE shortly after initiating the malfunction to inhibit a SDV/L High trip which would mask the results of the blown fuses.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Group one rods have scrammed, Reactor power has been reduced significantly.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.16.1B REV. 0

TITLE: *RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 3 & CH B GROUP 3)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 3& CH B GROUP 3) Malfunction. Proper response of the Group 3 Control Rods listed on Attachment 7.1 including the Full Core Display Accumulator Lights and the Blue Scram lights were tested and verified. Proper response of the Group 3 solenoid lights for RPS A and RPS B were tested and verified..Simulator placed in FREEZE shortly after initiating the malfunction to inhibit a SDV/L High trip which would mask the results of the blown fuses.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Group three rods have scrammed, Reactor power has been reduced significantly.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.16.1C REV. 0

TITLE: *RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 4 & CH B GROUP 4)*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS SCRAM GROUP FUSES BLOWN (CH A GROUP 4& CH B GROUP 4) Malfunction. Proper response of the Group 4 Control Rods listed on Attachment 7.1 including the Full Core Display Accumulator Lights and the Blue Scram lights were tested and verified. Proper response of the Group 4 solenoid lights for RPS A and RPS B were tested and verified. .Simulator placed in FREEZE shortly after initiating the malfunction to inhibit a SDV/L High trip which would mask the results of the blown fuses.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Group four rods have scrammed, Reactor power has been reduced significantly.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.17.1 REV. 0

TITLE: *RWCU LEAK IN SUCTION LINE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RWCU LEAK IN SUCTION LINE Malfunction. A break in the return line occurs betwee check valve RWCU-V-39 and flow transmitter FT-41.System responses included: increasing pump suction flow, decreasing pump discharge pressure, increased flow through filter demin, increase in delta flow indication, accompanying alarms, RWCU-V-1 and V-4 close, RWCU pump trips when RWCU-V-1 and V-4 energize. Proper response on activation of the RWCU LEAK IN SUCTION LINE was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RWCU system isolated, High sump levels Rx bldg, possible ARM alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [x] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.17.2A REV. 0

TITLE: *RWCU DEMIN A PLUGGED*

OVERVIEW:

This test was performed to demonstrate the functionality of the RWCU DEMIN A PLUGGED Malfunction. Crud Buildup on Demin causes High Dp Isolation. System responses included: RWCU-FI-609 Pump Suction Flow decreased, RWCU-FI-605A decreased (to zero), P602-A5-6.7 CLEANUP FILTER DEMIN FAILURE alarmed and later cleared when FD "A" isolated, and RWCU-PI-600 Pump Disch Pressure increased slightly. Proper response on activation of the RWCU DEMIN A PLUGGED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.17.2B REV. 0

TITLE: *RWCU DEMIN B PLUGGED*

OVERVIEW:

.This test was performed to demonstrate the functionality of the RWCU DEMIN B PLUGGED Malfunction. Crude Buildup on Demin causes High D.P. Isolation. System responses included: RWCU-FI-609 Pump Suction Flow decreased, RWCU-FI-605B decreased (to zero), P602-A5--6.7 CLEANUP FILTER DEMIN FAILURE alarmed and later cleared when FD "B" isolated, and RWCU-PI-600 Pump Disch Pressure increased slightly. Proper response on activation of the RWCU DEMIN B PLUGGED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.2 REV. 0

TITLE: ***JET PUMP FAILURE***

OVERVIEW:

This test was performed to demonstrate the functionality of the JET PUMP FAILURE Malfunction. Nozzle assembly becoming detached from the mixer assembly causes jet pump failure (15,16). System responses included: Recirc loop flow B increased as indicated on RRC-FR-614, Total core flow decreased as indicated on MS-DPR/FR-613, Jet Pumps (15 &16) flow decreased radically, Jet Pumps (11,12,13,14,17,18, 19,20) decreased slightly, and reactor power decreased as indicated on IRM-LR-603 (A,C,D,B). Proper response on activation of the JET PUMP FAILURE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Power has decreased, Associated Jet Pump Flows have decreased significantly and not affected Jet Pump flow have decreased slightly

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.3A REV. 0

TITLE: *INSTRUMENT REFERENCE LINE BREAK D004B (PENX109)*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT REF LINE BREAK D004B (PENX109). Rupture of INST Line between REACTOR and CONDENSATE POT for DOO4B (PENX109). Apparent level increased RFW-DPR-4A, RFW-LI 606B indicated upscale high. REACTOR VESSEL HIGH LEVEL B SEAL light illuminated and RFW/TURBINE RPV LEVEL HIGH TRIP alarm activated. System responses included: MS-LP/PR-623B (red pen) downscale, MS-LR/PR-623B (black pen) going upscale high, RHR B/C INJECTION VLV OPEN permissive alarmed, MS-LI-10R upscale, and MS-PI-2 indicated downscle at RSD. Leak was allowed to run and caused drywell pressure to increase. DRYWELL PRESS HIGH/LOW Alert alarmed followed by the Drywell Press High Trip. Proper response on activation of INST REF LINE break DOO4B was tested and verified. NOTE: Details of Reactor Scram evaluated in test 14.4.9.24.33 and S/B Loca eval. 14.4.9.18.5.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has scrammed on Hi Drywell pressure.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.3B REV. 0

TITLE: *INSTRUMENT REFERENCE LINE BREAK D004C (PENX112)*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT REF LINE BREAK D004C(PENX112). Rupture of INST Line between REACTOR and COND for DOO4C (PENX112). Apparent level increased RFW-DPT-4C, RFW-LI 606C,&D indicated upscale high. REACTOR VESSEL HIGH LEVEL C SEAL light illuminated and RFW/TURBINE RPV LEVEL HIGH TRIP alarm activated. System responses included: Injection Vlv Closure RPV LEVEL HIGH +54.5 alarmed (HPCS-V-4 remained closed), MS-LI-604 indicated upscale P603, and FD flow increased. Leak was allowed to continue. DRYWELL PRESS HIGH/Low Alert alarmed followed by the Drywell Press High Trip. Proper response on activation of INST REF LINE break DOO4C was tested and verified. NOTE: Details of Reactor Scram evaluated in test 14.4.9.24.33, S/B Loca evaluated in 14.4.9.18.5. MT/GEN TRIP in 14.4.9.24.31, and High Level in 14.4.9.24.49

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has scrammed on Hi Drywell pressure.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.3C REV. 0

TITLE: *INSTRUMENT REFERENCE LINE BREAK D004D (PENX106)*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT REF LINE BREAK D004D (PENX106). Rupture of INST Line between REACTOR and CONDENSATE POT for DOO4D (PENX106). System responses included: RHR A INJECTION VLV OPEN permissive alarmed, LPCS INJECTION VLV OPEN permissive alarmed, Apparent level MS-LR-615 FUEL ZONE RPV level recorder remained upscale high, D/W Floor Drain Sump flow increased, and Containment temperatures increased. Leak was allowed to continue. DRYWELL PRESS HIGH/Low Alert alarmed followed by the Drywell Press High Trip. Proper response on activation of INST REF LINE break DOO4D was tested and verified.NOTE: Details of Reactor Scram evaluated in test 14.4.9.24.33, S/B Loca evaluated in 14.4.9.18.5 MT/GEN TRIP in 14.4.9.24.31, and High Level in 14.4.9.24.49

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has scrammed on Hi Drywell pressure.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.4 REV. 0

TITLE: *RECIRCULATION PUMP SEAL FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RECIRCULATION PUMP SEAL FAILURE Malfunction. Improper reassembly on rebuilt results in RRC-P-1A upper and lower seal failure. System responses included: appropriate alarms, drop in pressure across lower seal, seal pressure decreasing to zero, drywell floor drain sump flow increases, pump A number 1 and 2 seal cavity temperatures increase, drywell pressure and temp increase. Proper response on activation of the Recirculation Pump Seal Failure was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RRC-P-1A seals have failed, large leak of coolant to drywell, pressure and temperature in drywell are increasing.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER Clinton Event
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.6B REV. 0

TITLE: *INSTRUMENT VARIABLE LEG LINE BREAK x111*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT VARIABLE LEG LINE BREAK x111 Malfunction. Rupture of Instrument Line Variable Leg, X111, outside Primary Containment. PI-EFC-X108 changed position from open to closed. Apparent -50" lvl responses included: RECIRC (A&B) PUMP TRIP ATWS does not trip, ATWS-ARI TRIPS did not annunciate, N4S ISOL RPV LEVEL LOW alarmed, MS-LR/PR-623B shifted to fast speed, and RC-2 Half Trip alarmed. Apparent -129" lvl responses included: RHR-P-2B & 2C autostarted, DG-2 AND SW-P-1B autostarted, RCIC Initiated, Main Turbine Tripped, Appropriate alarms occurred, and the Reactor Scrammed. Proper response on activation of the INSTRUMENT VARIABLE LEG LINE BREAK X111 malfunction was tested and verified.NOTE: Reactor Scram evaluated 14.4.9.24.33, MT/GEN Trip evaluated 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed, MT/GEN Tripped, RHR B&C started.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.6C REV. 0

TITLE: *INSTRUMENT VARIABLE LEG LINE BREAK x113*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT VARIABLE LEG LINE BREAK x113 Malfunction. Rupture of Instrument Line Variable Leg, X113, outside Primary Containment. PI-EFC-X113 changed position from open to closed. Apparent -50" lvl responses included: loss of level as indicated on MS-LI-604, HPCS system initiated with appropriate alarms, N4S ISOL RPV LEVEL LOW -50" alarmed, MSIV Half Trip System A,MS-LR/PR-623A shifted to fast speed, and RC-2 Half Trip alarmed. Proper response on activation of the INSTRUMENT VARIABLE LEG LINE BREAK X113 malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: 100% Power, HPCS system initiated.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.6D REV. 0

TITLE: *INSTRUMENT VARIABLE LEG LINE BREAK x108*

OVERVIEW:

This test was performed to demonstrate the functionality of the INSTRUMENT VARIABLE LEG LINE BREAK x108 Malfunction. Rupture of Instrument Line Variable Leg, X108, outside Primary Containment. PI-EFC-X108 changed position from open to closed. Apparent -50" lvl responses included: RECIRC (A&B) PUMP TRIP ATWS does not trip, ATWS-ARI TRIPS did not annunciate, N4S ISOL RPV LEVEL LOW alarmed, MSIV Half Trip System B alarmed, and RC-1 Half Trip alarmed. Apparent -129" lvl responses included: LPCS/RHR A autostarted, DG-1 AND SW-P-1A autostarted, RCIC Initiated, Main Turbine Tripped, Appropriate alarms occurred, and the Reactor Scrammed. Proper response on activation of the INSTRUMENT VARIABLE LEG LINE BREAK X108 malfunction was tested and verified.NOTE: Reactor Scram evaluated 14.4.9.24.33, MT/GEN Trip evaluated 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed, MT/GEN Tripped, LPCS/RHR A started.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.8 REV. 0

TITLE: *HI RECIRCULATION PUMP A VIBRATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the HI RECIRCULATION PUJMP A VIBRATION Malfunction. Impeller cracking causes recirculation pump high vibration. Proper response on activation of the Hi Recirculation Pump A Vibration was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.18.8A REV. 0

TITLE: *HI RECIRCULATION PUMP B VIBRATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the HI RECIRCULATION PUMP B VIBRATION Malfunction. Impeller cracking causes recirculation pump high vibration. Proper response on activation of the Hi Recirculation Pump B Vibration was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.2A REV. 0

TITLE: *CONDENSATE BOOSTER PUMP 2B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the CONDENSATE BOOSTER PUMP 2B TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: booster motor amps decreased, appropriate alarms occur, booster pump discharge header pressure decreases, RFW pump suction pressure decreases, and RFW pumps trip. Proper response on activation of the
CONDENSATE BOOSTER PUMP 2B Trip was tested and verified. NOTE: RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RFW pumps have tripped, Reactor has scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 86-024
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.2B REV. 0

TITLE: *CONDENSATE BOOSTER PUMP 2C TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the CONDENSATE BOOSTER PUMP 2C TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: booster motor amps decreased, appropriate alarms occur, booster pump discharge header pressure decreases, RFW pump suction pressure decreases, and RFW pumps trip. Proper response on activation of the CONDENSATE BOOSTER PUMP 2C Trip was tested and verified. NOTE: RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.1

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RFW pumps have tripped, Reactor has scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 86-024
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.4 REV. 0

TITLE: *CRD A PUMP TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the CRD A PUMP TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: CRD-P-1A trips, appropriate alarms occur, CHARGING HEADER PRESSURE drops to zero, DRIVE HDR/RX DELTA P drops to zero, COOLING HDR/RX DELTA P drops to zero, DRIVE HEADER FLOW drops to zero, COOLING HDR FLOW drops to zero, SYSTEM FLOW drops to zero, and ROD ACCUMULATOR TROUBLE alarms occur. Proper response on activation of CRD A PUMP TRIP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium XEnonSame as above, and Multiple ROD ACCUMULATOR TROUBLE alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.4A REV. 0

TITLE: *CRD B PUMP TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the CRD B PUMP TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: CRD-P-1B trips, appropriate alarms occur, CHARGING HEADER PRESSURE drops to zero, DRIVE HDR/RX DELTA P drops to zero, COOLING HDR/RX DELTA P drops to zero, DRIVE HEADER FLOW drops to zero, COOLING HDR FLOW drops to zero, SYSTEM FLOW drops to zero, and ROD ACCUMULATOR TROUBLE alarms occur. Proper response on activation of CRD B PUMP TRIP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, and Multiple ROD ACCUMULATOR TROUBLE alarms

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.13 REV. 0

TITLE: *480 VAC MC-7B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the 480 VAC MC-7B TRIP Malfunction. Loss of MC-7B, caused by tripping of its feeder breaker. Proper response to the loss of motive power provided by MC-7B and her daughter busses was tested and verified. Proper response to the loss of control and indication power provided by MC-7B and her daughter bussses was tested and verified.

Note: The primary purpose of this test is to check that MC-7B and her daughter busses provide motive power, control power, and indication power to the correct loads. A minimum of a 10% sampling criteria is used. One hundred percent of the motive loads are listed in the body of the procedure. One hundred percent of the control and indication loads are listed in attachment E.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Multiple motive, control, and indication loads have been de-energized from bus MC-7B and her daughter busses.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 85-006
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.18A REV. 0

TITLE: *RPS A MG SET TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPS A MG SET TRIP Malfunction. RPS-EPA-3A breaker opens. System responses included: Multiple annunciators associated with a total loss of RPS Bus A, Scram Group Solenoid lights for Gps 1,2,3,&4 extinguished, BU Scram amber lights illuminated, RPS Bus A power available light extinguished, Off gas valve AR-V-1 closed, and APRM groups A,C, and E indicated downscale. An NSSSS outboard isolation occurred.; Group's 1,2,4,5,6, &7 (outboard) valves closed and could not be opened, MSIV's remained open (half isolation only). Proper response to the loss of control and indication power provided by RPS-PP-001-A was tested and verified IAW attachment E. Proper response on activation of the RPS A MG SET TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RPS Bus A de-energized, NSSSS outboard isolation present.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 86-012, 88-013, 88-015
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.23 REV. 0

TITLE: *RHR A PUMP SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR A PUMP SHAFT SHEAR Malfunction. Metal fatigue causes the coupling to break between the pump and the prime mover. RHR A in Full Flow Test, system responses included: RHR A flow decreased to approximately 200 gpm as indicated on RHR-FI-603A, pressure decreased to approximately 20 psig on RHR-PI-612, RHR-P-2A motor amps decreased, RHR-V-64A opened, and appropriate annunciators alarmed. Proper response on activation of RHR A PUMP SHAFT SHEAR was tested and verified

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.34A REV. 0

TITLE: *RECIRCULATION PUMP A TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RECIRCULATION PUMP A TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: Multiple JP meter response IAW test procedure, RRC A Loop JP flow decreased to zero and then increased as reverse flow, RRC B Loop JP flow increased as RRC A loop entered reverse flow, appropriate annunciators alarmed, and total core flow and core DP decreased as indicated on MS-DPR/FR-613. Reactor power decreased as indicated on IRM/ APRM recorders. RPV level increased as indicated on RFW-LR-608. Simulator Data was collected and evaluated as SPVS File 14.4.9.24.34A, RRC A PUMP TRIP. Proper response on activation of the Recirculation Pump A Trip malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Plant in Single Loop at reduced power

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — PAT 30A
- [ ] ENGINEERING EVALUATION
- [X] FSAR — 15.3.1
- [ ] SOER / LER
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.36 REV. 0

TITLE: *RHR-V-42B FAILS CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-V-42B FAILS CLOSED Malfunction. Thermal binding results in valve seizure. An attempt to open the valve RHR-V-42B using the switch was made; the valve would not open. Shifted Norm/Emerg switch RHR-V-42B from Normal to Emergency; RHR-V-42B would not open. Proper response on activation of the RHR-V-42B Fails Closed malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.37 REV. 0

TITLE: *HPCS-V-4 FAIL AS IS*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS-V-4 FAIL AS IS Malfunction. Thermal binding results in valve seizure. System response included: HPCS valve did not move after receiving an open signal. Proper response on activation of the HPCS-V-4 Fail as Is was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.37B REV. 0

TITLE: *HPCS-V-4 FAILS TO AUTO OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS-V-4 FAILS TO AUTO OPEN Malfunction. Thermal binding results in valve seizure. HPCS system was initiated, System response included: HPCS-P-1 auto started, HPCS-V-12 minimum flow valve opened, HPCS-V-4 did not open, and HPCS-FI-603 indicated zero flow. HPCS-V-4 control switch was placed to the open position, system response included: . Proper response on activation of the HPCS-V-4 Fails to Auto Open was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.38 REV. 0

TITLE: *LPCS-V-5 FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPCS-V-5 FAILS CLOSED Malfunction. LPCS-V-5 control switch was placed to the open position; LPCS-V-5 did not open. Proper response on activation of the LPCS-V-5 Fails Closed malfunction was tested and verified.

INITIAL CONDITIONS: IC-1 COLD SHUTDOWN

FINAL CONDITIONS: IC-1 COLD SHUTDOWN

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.44 REV. 0

TITLE: *LPCS - P 2 SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPCS-P-2 SHAFT SHEAR Malfunction. Metal fatigue causes the coupling to break between the pump and the prime mover. System responses included: pressure as measured at LPCS-PI-3 and RHR-PI-612A decreased, appropriate alarms occurred, and normal red running light still energized. Proper response on activation of the LPCS-P-2 Shaft Shear was tested and verifie

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.44A REV. 0

TITLE: *LPCS - P -2 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPCS-P-2 TRIP Malfunction. LPCS-P-2 Trips on thermal overload due to motor electrical fault. System responses included: pressure as measured at LPCS-PI-3 and RHR-PI-612A decreased, (LPCS PUMP DISCH PRESS HIGH/LOW & RHR A PUMP DISCH PRESS HIGH/LOW) alarmed, applicable BISI lights illuminated, and (RHR A OUT OF SERVICE & LPCS OUT OF SERVICE) annunciators alarmed. Proper response on activation of the LPCS-P-2 Trip malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.45 REV. 0

TITLE: *RHR-P-3 SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-3 SHAFT SHEAR Malfunction. Metal fatigue causes the coupling to break between the pump and the prime mover. System responses included: pressure as measured at RHR-PI-612B and RHR-PI-612C decreased, appropriate alarms occurred, and normal red running light was still energized. Proper response on activation of the RHR-P-3 Shaft Shear was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.47 REV. 0

TITLE: *HPCS WATERLEG PUMP SHAFT SHEAR (HPCS-P-3)*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS WATERLEG PUMP SHAFT SHEAR (HPCS-P-3) Malfunction. Metal fatigue causes the coupling to break between the pump and the prime mover. System responses included: pressure as measured at HPCS-P-601 decreased, appropriate alarms occurred, and normal red running light was still energized. Proper response on activation of the HPCS Waterleg Pump Shaft Shear was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.48 REV. 0

TITLE: *COND-P-1B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the COND-P-1B TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: Cond Pump B motor amps decreased, Cond Pumps A & C amps increase, appropriate alarms occurred, condensate pump discharge header pressure decreased, Booster and RFW pump suction pressures decreased, and RFW pumps tripped. Proper response on activation of the COND-P-1B TRIP was tested and verified. NOTE: RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.1

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RFW pumps tripped, Reactor has scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.48B REV. 0

TITLE: *COND-P-1C TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the COND-P-1C TRIP Malfunction. Electrical Malfunction causes pump trip. System responses included: Cond Pump C motor amps decreased, Cond Pumps A & B amps increased., appropriate alarms occurred, condensate pump discharge header pressure decreased, Booster and RFW pump suction pressures decreased, and RFW pumps tripped. Proper response on activation of the COND-P-1C TRIP was tested and verified. NOTE: RFPT TRIP evaluated per 14.4.9.2.9, REACTOR SCRAM evaluated per 14.4.9.24.33, MT/GEN TRIP evaluated per 14.4.9.24.31, MSIV ISOLATION evaluated per 14.4.10.3, LOSS OF ALL RFW evaluated per 14.4.10.1

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: RFW pumps tripped, Reactor has scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.49 REV. 0

TITLE: *MASTER FWLC FAILS HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the Master FWLC failing high. The RFP speed controllers RFW-SC-601A (B) response to the high output signal from FRW-LIC-600 was verified. The RFP speed, discharge pressure and flow was verifed to be correct. The RFP's and MT tripped at RPV/L 8 as anticipated. The proper response for the Main TurbineTrip (14.4.9.24.31), RFP Turbine Trip 14.4.9.2.9, Main Generator Trip (14.4.9.13.1), and Reactor Scram (14.4.9.24.33) previously verified in detail in the specified test documents. Proper response on activation of Master FWLC fails High was tested and verified.

INITIAL CONDITIONS: IC 13, 50% Power, 75% Rod Line

FINAL CONDITIONS: Post Scram, with RFP and MT tripped, MSIV and NS$ Isolation at RPV/L 2 with SRV operation controlling RPV/P at setpoint, and HPCS-V-4 opening at RPV/L 2 and cycling closed at RPV/L 8.

SOURCE OF COMPARISON DATA:

- [X] PLANT DATA SET — LER85-059
- [ ] ENGINEERING EVALUATION
- [ ] FSAR
- [X] SOER / LER — 85-059
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.54 REV. 0

TITLE: *BATTERY CHARGER C1-7 TRIP*

OVERVIEW:

.This test was performed to demonstrate the functionality of the BATTERY CHARGER C1-7 TRIP Malfunction. Loss of Charger C1-7, due to output breaker trip. System responses included: (CHARGER C1-7 TROUBLE, INVERTER IN-5 TROUBLE, and 125V LOSS BATT B1-7 FAILURE) alarmed, AM-C1-7 decreased to zero, AM-B1 increased to approximate reading on AM-C1-7 prior to initialization, VM-S1-7 indicated approximately 125vdc, and bus S1-7 voltage decreased with time. Proper response on activation of Battery Charger C1-7 Trip was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.54A REV. 0

TITLE: *CO-1A CHARGER TRIP & BATTERY BO-1A DISCHARGE*

OVERVIEW:

This test was performed to demonstrate the functionality of the CO-1A CHARGER TRIP & BATTERY BO-1A DISCHARGE Malfunction. Loss of Charger CO-1A due to output breaker trip. System responses included: 24 VDC CHARGE C0-1A TROUBLE alarmed, AM-B0-1A increased to approximately same reading as was on AM-C0-1A prior to malfunction, VM-S0-1A indicated approximately 24 VDC and decreased with time. Proper response on activation of C0-1A Charger Trip & Battery B0-1A Discharge malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.54B REV. 0

TITLE: *C2-1 CHARGER TRIP & BATTERY B2-1 DISCHARGE*

OVERVIEW:

This test was performed to demonstrate the functionality of the C2-1 CHARGER TRIP & BATTERY B2-1 DISCHARGE Malfunction. Loss of Charger C2-1 due to output breaker trip. System responses included: (250 VDC CHARGER C2-1 TROUBLE and RCIC DIV 1 OOS) annunciators alarmed, IN- 1 Auto Transferred to Alternate Source, AM C2-1 decreased to zero, and AM-B2-1 increased to approximately the same initial reading as indicated on AM C2-1. The annunciator 250 VDC LOSS BATT B2-1 FAIL alarmed when voltage dropped to LT 220 VDC on S2-1 and VM-S2-1 indicated approximately 250 VDC initially and continued to decrease with time. Proper response on activation of C2-1 Charger Trip & Battery B2-1 Discharge was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.57 REV. 0

TITLE: *H2-SIDE SO PUMP TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the H2-SIDE SO PUMP TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: GEN SEAL OIL H2 SIDE PUMP OFF alarms, pressure meters TO-PI-24 and TO-DPI-23 do not change, Generator hydrogen pressure and purity decrease slowly over time. Proper response on activation of tripping the H2-SIDE SO PUMP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.58 REV. 0

TITLE: *AIR-SIDE SO PUMP TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the AIR-SIDE SO PUMP TRIP Malfunction. A piece of the impeller separates from the impeller and wedges between the impeller and the casing. System responses included: GEN SEAL OIL AIR-SIDE PUMP OFF alarms, pressure meters TO-PI-24 and TO-DPI-23 do not change. Proper response on activation of tripping the AIR-SIDE SO PUMP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.59 REV. 0

TITLE: *SHAFT-DRIVEN LO PUMP FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the SHAFT-DRIVEN LO PUMP FAILURE Malfunction. Metal fatigue causes the coupling to break between the pump and prime mover. System responses included: TG BRG OIL EMERG PUMP ON alarm, TO-P-BOP pump has started, and TO-P-EOP emergency oil pump auto start. Proper response on activation of the SHAFT-DRIVEN LO PUMP FAILURE was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.60 REV. 0

TITLE: *CRD-FCV-2 FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrate the functionality of the CRD-FCV-2 FAILS CLOSED Malfunction. Electronic Malfunction. System responses included: CRD-P-1A MOTOR CURRENT decreased, DRIVE HDR/RX DELTA P decreased, COOLING HDR/RX DELTA P decreased CRD-FCV-2A red and green position indication changed to all Green, cooling hdr flow decreased, and CRD flow decreased. Proper response on activation of the CRD-FCV-2 FAILS CLOSED was tested and verified.,

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, with increasing CRD temperatures.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.63A REV. 0

TITLE: ***DEH PUMP 1B TRIP***

OVERVIEW:

This test was performed to demonstrate the functionality of the DEH PUMP 1B TRIP Malfunction. Spurious breaker trip. System responses included: DEH-P-1B tripped, DEH HDR pressure decreased, appropriate annunciators alarmed, and the standby DEH-P-1A auto started at 1800 psig. Proper response on activation of the DEH-P-1B trip was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, with Standby DEH-P-1A is running.,

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [x] SOER / LER 84-046, 90-021
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.67A REV. 0

TITLE: *RFW-LI-606A FAILS AS IS*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW-LI-606A FAILS AS IS Malfunction. Level Sensor C34-N004A Fails as is. Reactor Power was decreased to 90% using RRC FCV's 60A & 60B. System responses included: RFW-LI-606A did not respond, RFW-LI-606B and RFW-LI-606C showed increasing RPV/L, RPV/L Hi/Lo Alarm P603-A8-3-7 did not alarm, and the response of Master Controller was sluggish. Power was decreased rapidly to 60%; system responses included: Stm Flow & Rx Pwr decreased with RPV/L increasing due to RFW/F GT MS/F, RPV/L went to LVL 8 on RFW-LI-606B & RFW-LI-606C with RFW-LI-606A unchanged, MT tripped, and Reactor Scrammed. Proper response of RFW-LI-606A fails as is was tested and verified. NOTE: RFW TURB TRIP evaluated in 14.4.9.2.9,MT TRIP evaluated in14.4.9.24.31, RX SCRAM evaluated in 14.4.9.24.33

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor is Scrammed, MT Tripped on high level.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.67D REV. 0

TITLE: *RFW-LI-606C FAILS HIGH*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW-LI-606C FAILS HIGH Malfunction. Level Sensor C34-N004C Fails high. System responses included: RFW-LI-606C and 606D indicated upscale, RPV high level channel C seal in amber light illuminated, and P603-A8-4-7 RFW/TURBINE RPV level high Trip alarmed. Proper response on activation of the RFW-LI-606C FAILS HIGH malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.68 REV. 0

TITLE: *RCIC-V-63 FAILS OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC-V-63 FAILS OPEN Malfunction. Internal electrical failure in the auto-close logic circuit. System responses included: placed the RCIC-V-63 Keyswitch to close, the STM SUPPLY LINE INBOARD ISOL did not close. Proper response on activation of the RCIC-V-63 Fails Open was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.69 REV. 0

TITLE: *RCIC-V-8 FAILS OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC-V-8 FAILS OPEN Malfunction. Internal electrical failure in the auto-close logic circuit. System responses included: ARM and DEPRESSED manual initiation push-button, RCIC-V-8 did not close, placed STEAM SUPPLY LINE OUTBOARD ISOL RCIC-V-8 control switch in close, valve did not close. Proper response on activation of the RCIC-V-8 Fails Open was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.72 REV. 0

TITLE: *SLC-P-1B FAILS TO START*

OVERVIEW:

This test was performed to demonstrate the functionality of the SLC-P-1B FAILS TO START Malfunction. Internal electrical failure in the auto-open logic circuit. Placed the key switch SLC-RMS-S1B, SLC SYSTEM B, to OPERATE. System responses included: SLC-P-1B did not start, no indication of discharge pressure, and no indication of SLC flow. Proper response on activation of the SLC-P-1B FAILS TO START malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85A REV. 0

TITLE: *MS-V-22A - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-22A-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-22A, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-22A did not shut the valve. Proper response on activation of the MS-V-22A Fails to Close malfunction was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-22A failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85B REV. 0

TITLE: *MS-V-28A- FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28A-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-28A, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-28A did not shut the valve. Proper response on activation of the MS-V-28A Fails to Close malfunction was tested and verified.NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-28A failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85C REV. 0

TITLE: *MS-V-28B - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28B-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-28B, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-28B did not shut the valve. Proper response on activation of the MS-V-28B Fails to Close malfunction was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-28B failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85D REV. 0

TITLE: *MSIV's - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MSIV's - FAILS TO CLOSE Malfunction. MSIV's ALL mechanically Fail in the Open position. Manual and NS4 isolation push-button attempts to shut the MSIV's with the malfunction activated would not shut the valves. Proper response on activation of the MSIV's - Fails to Close malfunction was tested and verified. NOTE: Complete MSIV evaluation evaluated in 14.4.10.3, NS4 Isolation Groups 2-8 are evaluated in 14.4.9.2.6.3

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85E REV. 0

TITLE: *MS-V-22B - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-22B-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-22B, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-22B did not shut the valve. Proper response on activation of the MS-V-22B Fails to Close malfunction was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-22B failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85F REV. 0

TITLE: *MS-V-22C - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-22C-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-22C, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-22C did not shut the valve. Proper response on activation of the MS-V-22C Fails to Close malfunction was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-22C failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85G REV. 0

TITLE: *MS-V-28C - FAILS TO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28C-FAILS TO CLOSE Malfunction. MSIV fails to close due to mechanical seizure of disc. System responses included: all MSIV's closed with the exception of MS-V-28C, Reactor scrammed, MT/GEN Tripped on reverse power, SRV's operated to control pressure, a manual attempt to close MS-V-28C did not shut the valve. Proper response on activation of the MS-V-28C Fails to Close malfunction was tested and verified. NOTE: Reactor Scram evaluated in 14.4.9.24.33, MSIV Isolation evaluated in 14.4.10.3, MT Trip evaluated in 14.4.9.24.31

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scram initiated due to initiation of MSIV NS4 signal with MS-V-28C failing open.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85H REV. 0

TITLE: *MS-V-28C INADVERTENT SLOW CLOSURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28C - INADVERTENT SLOW CLOSURE Malfunction. Slow, inadvertent closure of MS-V-28C over approximately one minute.System responses included: MSIV-V-28C slow closed, was full shut at about 60 seconds, and Rx power and pressure stabilized approximately one minute later. The following Simulator Performance Verification System (SPV's) variables were plotted and evaluated: APRM (A,B), RPV/L NR, RPV/P NR, MSL (A,B,C,D) FLOW, AND MAIN GEN MW ELECT. Proper response on activation of the MS-V-28C -Inadvertent Slow Closure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power. with MS Lines A,B, &D flow indication upscale and RPV/P higher than initial.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85I REV. 0

TITLE: *MS-V-28D INADVERTENT SLOW CLOSURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28D - INADVERTENT SLOW CLOSURE Malfunction. Slow, inadvertent closure of MS-V-28D over approximately one minute. System responses included: MSIV-V-28D slow closed, was full shut at about 60 seconds, and Rx power and pressure stabilized approximately one minute later. The following Simulator Performance Verification System (SPV's) variables were plotted and evaluated: APRM (A,B), RPV/L NR, RPV/P NR, MSL (A,B,C,D)FLOW, AND MAIN GEN MW ELECT. Proper response on activation of the MS-V-28D Inadvertent Slow Closure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power. with MS Lines A,B, &C flow indication upscale and RPV/P higher than initial.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.24.85J REV. 0

TITLE: *MS-V-28B -INADVERTENT SLOW CLOSURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the MS-V-28B - INADVERTENT SLOW CLOSURE Malfunction. Slow, inadvertent closure of MS-V-28B over approximately one minute. System responses included: MSIV-V-28B slow closed, was full shut at about 60 seconds, and Rx power and pressure stabilized approximately one minute later. The following Simulator Performance Verification System (SPV's) variables were plotted and evaluated: APRM (A,B), RPV/L NR, RPV/P NR, MSL (A,B,C,D)FLOW, AND MAIN GEN MW ELECT. Proper response on activation of the MS-V-28B Inadvertent Slow Closure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power. with MS Lines A,C, & D flow indication upscale and RPV/P higher than initial.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.1 REV. 0

TITLE: *LPCS-P-1 SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPCS-P-1 SHAFT SHEAR Malfunction. LPCS-P-1 Shaft Shear Break between motor and pump. System responses included: LPCS-P-1 Motor Amps decreased, LPCS-P-1 Flow decreased to zero, Discharge pressure decreased to approx to 10# on LPCS-PI-3, and appropriate annunciator alarms. Proper response on activation of malfunction LPCS-P-1 SHAFT SHEAR was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.1A REV. 0

TITLE: *LPCS-P-1 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPCS-P-1 TRIP Malfunction. Electric fault causes overload trip. System responses included: LPCS-P-1 Amps decreased to zero, Discharge Press LPCS-PI-3 decreased to approx 10#, LPCS Flow LPCS-FI-600 decreased to approx 200 GPM, and appropriate annunciators alarmed. Proper response on activation of malfunction LPCS-P-1 was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.3 REV. 0

TITLE: *RHR-P-2C SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-2C SHAFT SHEAR Malfunction. RHR-P-2C Shaft Shear break between motor and pump. System responses included: RHR-P-2C motor amps decreased, RHR-P-2C discharge flow decreased, discharge pressure decreased, and appropriate annunciators alarmed. Proper response on activation of RHR-P-2C Shaft Shear was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.4 REV. 0

TITLE: *HPCS-P-1 SHAFT SHEAR*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS-P-1 SHAFT SHEAR Malfunction. HPCS-P-1 Shaft Shear break between motor and pump. System responses included: HPCS-P-1 motor amps decreased, HPCS-P-1 discharge flow decreased, discharge pressure decreased, and appropriate annunciators alarmed. Proper response on activation of HPCS-P-1 Shaft Shear was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.6 REV. 0

TITLE: *RHR-V-42B FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrated the functionality of the RHR-V-42B FAILS CLOSED Malfunction. Fails closed due to mechanical seizure. System responses included: RHR-B initiated at 1.68# D/W pressure, RHR-V-42B did not open at 470# Rx Press, there was no indicated system flow on RHR-FI-603B, and RHR-V-42B would not open manually. Proper response on activation of RHR-V-42B FAILS CLOSED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, MEDIUM SIZE LOCA

FINAL CONDITIONS: Reactor has scrammed, LOCA in progress, no injection from RHR B system.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.7 REV. 0

TITLE: *RHR-V-42C FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrated the functionality of the RHR-V-42C FAILS CLOSED Malfunction. Fails closed due to mechanical seizure. System responses included: RHR-C initiated at 1.68# D/W pressure, RHR-V-42C did not open at 470# Rx Press, there was no indicated system flow on RHR-FI-603C, and RHR-V-42C would not open manually. Proper response on activation of RHR-V-42C FAILS CLOSED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, MEDIUM SIZE LOCA

FINAL CONDITIONS: Reactor has scrammed, LOCA in progress, no injection from RHR C system.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.8 REV. 0

TITLE: *RHR-P-2B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-2B Malfunction. RHR-P-2B Trip on overload due to electrical fault. System responses included: RHR-P-2B AMPS indicated 0, RHR-P-2B Flow indicator approx 200 on RHR-FI-603B, RHR-P-2B Discharge Pressure indicated approximately 10 psig on RHR-PI-612B, control switch indicating lights indicated pump tripped, and appropriate annunciators alarmed. Proper response on activation of malfunction RHR-P-2B TRIP were tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, RHR-P-2B in Full Flow Test at rated flow.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, RHR-P-2B in Full Flow Test at rated flow, except RHR-P-2B is tripped

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.9 REV. 0

TITLE: *RHR-P-2C TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-P-2C Malfunction. RHR-P-2C Trip on overload due to electrical fault. System responses included: RHR-P-2C AMPS indicated 0, RHR-P-2 Flow indicated approx 20 on RHR-FI-603C, RHR-P-2C Discharge Pressure indicated approximately 10 psig on RHR-PI-612C, control switch indicating lights indicated pump tripped, and appropriate annunciators alarmed. Proper response on activation of malfunction RHR-P-2C TRIP was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, RHR-P-2C in Full Flow Test at rated flow.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium XEnon, RHR-P-2C in Full Flow Test at rated flow, RHR-P-2C is tripped

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.10 REV. 0

TITLE: *HPCS-P-1 TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the HPCS-P-1 TRIP malfunction. Electrical fault causes HPCS-P-1 to trip. System responses included: HPCS-P-1 AMPS indicated 0, HPCS-P-1 flow indicated approx 200 on HPCS-FI-603, HPCS-P-1 discharge pressure indicated approximately 10 psig on HPCS-P-601, control switch indicating lights indicated pump tripped, and appropriate annunciators alarmed. Proper response on activation of HPCS-P-1 TRIP malfunction was tested and verifie

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, HPCS-P-1 in full flow system test.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon with HPCS-P-1 is tripped.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.11 REV. 0

TITLE: ***RHR-V-16A, 16B, 17A, & 17B FAIL CLOSED***

OVERVIEW:

This test was performed to demonstrate the functionality of the RHR-V-16A, 16B, 17A, & 17B FAIL CLOSED Malfunction. RHR-V-16A, 16B, 17A, 17B mechanically bound in closed position. Valves were cycled one at a time to insure they worked properly. Valve malfunctions were inserted for the valves one at a time, attempts were then made to open the respective valves. Proper response on activation of the individual valve malfunctions was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.12 REV. 0

TITLE: *RCIC-V-13 FAILS TO OPEN*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC-V-13 FAILS TO OPEN Malfunction. RCIC-V-13 fails to open due to electrical malfunction. Armed and Depressed RCIC initiation PB. System responses included: RCIC-V-2 opened, RCIC-V-13 did not open, RCIC Turbine (Speed, Exh Press, Pump Discharge Press) increased, RCIC-V-19 opened on low flow, and RCIC system flow remained at zero as indicated on RCIC-FI-600. RCIC-V-13 did not open when C/S was placed to open. Proper response on activation of the RCIC-V-13 FAILS TO OPEN malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.13 REV. 0

TITLE: *RCIC-V-45 FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCIC-V-45 FAILS CLOSED Malfunction. RCIC-V-45 fails closed due to electrical fault. RCIC in FULL FLOW test, CST to CST. System responses included: RCIC-V-45 closed, RCIC-V-19 did not auto open with RCIC coastdown, RCIC Turbine (Speed, Exh Press, Discharge Press, System Flow) decreased; appropriate annunciators alarmed, and RCIC-FIC-600 output increased to maximum. RCIC-V-45 failed to open when C/S was placed to open. Proper response on activation of the RCIC-V-45 FAILS CLOSED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.15A REV. 0

TITLE: *RCC-P-1B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCC-P-1B TRIP malfunction. RCC-P-1B Trips on Thermal OL due to electrical fault. System responses included: RCC-P-1B tripped, RCC Pump B Motor OL Trip annunciator alarmed, RCC-P-1A auto started, RCC HDR PRESS RCC-PI-3 decreased and then returned to normal, and RCC-V-6 remained open. Proper response on activation of the RCC-P-1B TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RCC-P-1B and RCC-P-1C running RCC-P-1A in stby.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon RCC-P-1A and RCC-P-1C running.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.15B REV. 0

TITLE: *RCC-P-1C TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the RCC-P-1C TRIP malfunction. RCC-P-1C Trips on Thermal OL due to electrical fault. System responses included: RCC-P-1C tripped, RCC Pump C Motor OL Trip annunciator alarmed, RCC-P-1B auto started, RCC HDR PRESS RCC-PI-3 decreased and then returned to normal, and RCC-V-6 remained open. Proper response on activation of the RCC-P-1C TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, RCC-P-1A and RCC-P-1C running RCC-P-1B in stby.

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon RCC-P-1A and RCC-P-1B running.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.16 REV. 0

TITLE: *MC-8B TRIP*

OVERVIEW:

This test was performed to demonstrate the functionality of the MC-8B TRIP Malfunction. MC-8B BKR electrical fault in TRIPPING CKT. Proper response to the loss of motive power provided by MC-8B and her daughter busses MC-8B-A and MC-8B-B were tested and verified. Proper response to the loss of control and indication power provided by MC-8B and her daughter busses MC-8B-A and MC-8B-B were tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, loads on MC-8B and daughter busses de-energized.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.18 REV. 0

TITLE: *ARMS/PROCESS MONITOR FAILURES*

OVERVIEW:

This test was performed to demonstrate the functionality of the ARMS/PROCESS MONITOR FAILURES Malfunction. ARM CKT FAILURES causing associated ARM UPSCALE response. Fifteen ARM-RIS-*'s were checked individually. The following is an example of one test. ARM-RIS-4 malfunction was activated. System responses included: ARM-RIS-4 meter indicated high, high setpoint light illuminated on instrument, and Annunciator P602-A5-3.1 Rx Bldg. Rad High alarmed at setpoint. Proper response on activation of the individual ARMS/PROCESS MONITOR FAILURES was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.21 REV. 0

TITLE: *LPRM FAILS UPSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the LPRM FAILS UPSCALE Malfunction. System responses included: LPRM 24-25 Detector A Upscale light illuminated on FULL CORE display and LPRM Upscale annunciator P603-A8-2-5 alarmed. Control Rod 26-23 was selected: Upper left LPRM group Detector A level% Heat Flux Meter indicated Upscale, APRM A recorder read slightly higher, and RBM A recorder read higher. Proper response on activation of the LPRM FAILS UPSCALE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon,

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.22 REV. 0

TITLE: *RHR-V-42A FAILS CLOSED*

OVERVIEW:

This test was performed to demonstrated the functionality of the RHR-V-42A FAILS CLOSED Malfunction. Fails closed post LOCA due to mechanical seizure. System responses included: RHR-A initiated at 1.68# D/W pressure, RHR-V-42A did not open at 470# Rx Press, there was no indicated system flow on RHR-FI-603A, and RHR-V-42A would not open manually. Proper response on activation of RHR-V-42A FAILS CLOSED malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor has scrammed, LOCA in progress, no injection from RHR A system.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.23 REV. 0

TITLE: *CAS-C-1A- LOSS OF COOLING*

OVERVIEW:

This test was performed to demonstrate the functionality of the CAS-C-1A - LOSS OF COOLING Malfunction. CAS-C-1A Loss of Cooling (&Subsequent Trip). System responses included: Air Compressor A discharge temperature high annunciator alarmed, Air Compressor A Motor Trip alarmed, CAS-C-1A LATCH RESET white light extinguished, when stem pressure had dropped to approximately 90 psig the Standby Air Compressor and accompanying alarm came on. System air pressure began to rise and the AIR RECEIVER PRESS LOW alarm did not come in. Proper response on activation of the CAS-C-1A LOSS OF COOLING Malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon, CAS-C-1A compressor de-energized, Standby compressor running.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.24 REV. 0

TITLE: *TG HP ROTOR HIGH VIBERATION*

OVERVIEW:

This test was performed to demonstrate the functionality of the TG HP ROTOR HIGH VIBRATION Malfunction. Main Turbine HP Rotor Viberatioin due to improper balancing. System responses included: Viberation increased on TG-XR-VXCD pts 1&2, RED lights #1 &2 illuminated on TG Vibration Monitor #1, P820-B1-7-6 ROTOR MON 1 VIB HIGH annunciated at 7 mils as shown on TG-XR-VXCD pts 1&2, and bearings 1&2 indictated increased vibration on the DEH CRT (Display on Pg. 4). Proper response on activation of the TG HP ROTOR HIGH VIBRATION malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.25 REV. 0

TITLE: *GENERATOR HYDROGEN PRESSURE CONTROL FAILURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the GENERATOR HYDROGEN PRESSURE CONTROL FAILURE Malfunction. The malfunction simulates Hydrogen Pressure decrease with 100% severity. System responses included: GEN H2 PRESS LOW annunciated at LT 72 psig H2 press, GEN H2 TEMP HIGH annunciated at GT 48 degrees C gas temp as read on TG-TR-144, STATOR COIL WTR/H2 DP LOW annunciated at approx 55 psig press as read on H2-PI-1, GEN H2 PURITY LT 90% annunciated at <90% purity as read on H2-PU-1, and the white alarm light illuminated on TG-TR-144. Proper response on activation of the Generator Hydrogen Pressure Control Failure malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.26 REV. 0

TITLE: *RBM CH A FAILS UPSCALE*

OVERVIEW:

This test was performed to demonstrate the functionality of the RBM CH. A FAILS UPSCALE Malfunction. RBM A FAILS UPSCALE due to electrical fault in drawer. System responses included: RBM UPSCALE or INOP P603-A8-3-5 alarmed, RBM A indicated Upscale on IRM-LR-603C, RBM A UPSCALE light illuminated, ROD BLOCK OUT P603-A7-2-7 alarmed, and Withdraw Block Light illuminated on P603. RBM BYPASS SWITCH was positioned to A position: RBM UPSCALE ALARM cleared, ROD OUT BLOCK cleared, RBM A UPSCALE light extinguished, RBM A BYPASS light illuminated & WITHDRAWN BLOCK P603 Benchboard clears. Proper response on activation of RBM CH A FAILS UPSCALE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.27 REV. 0

TITLE: *RPV NR LEVEL RECORDER PEN STICKS*

OVERVIEW:

This test was performed to demonstrate the functionality of the RPV NR LEVEL RECORDER PEN STICKS Malfunction. Recorder Drive Cable breaks for NR Input on RFW-LR-608. Increased RPV LEVEL MASTER CONTROL RFW-LIC-600 Setpt to 39"; system responses included: RFW-LI-606(A,B,C) increased to 39", RFW-LR-608 NR Black Pen did not change. Decreased RPV LEVEL MASTER CONTROL RFW-LIC-600 Stpt to 31". RFW-LI-606 (A,B,C) RPV/L decreased to 31" and RFW-LR-608 NR Black Pen did not change. The Red pen did follow the transient. Proper response on activation of RPV NR LEVEL RECORDER PEN sticking was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.28 REV. 0

TITLE: *HI OXYGEN IN CONTAINMENT*

OVERVI

This test was performed to demonstrate the functionality of the HI OXYGEN IN CONTAINMENT Malfunction. Zirconium/Water Reaction is simulated to result in oxygen production. System responses included: CMS-O2R-1 and CMS-O2R-2 indicated (O2) increased to approximately 10%, OXYGEN LEVEL HIGH P814-J(1&2)-1-2 alarmed at 3.25%, and OXYGEN LEVEL HIGH P814-J(1&2)-5-2 alarmed at 3.7%. Proper response on activation of malfunction HI OXYGEN IN CONTAINMENT Malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.29 REV. 0

TITLE: *FWH 1A TUBE RUPTURE*

OVERVIEW:

This test was performed to demonstrate the functionality of the FWH 1A TUBE RUPTURE Malfunction. Erosion and hydraulic stress result in multiple tube ruptures. System responses included: LP HTR 1A LEVEL HIGH and HIGH TRIP alarms activated, BS-DV-1A opened, COND-V-123A and COND-V-134A closed and COND-V-141A opened, COND-DPI-17A indicated zero, STEAM DUMP VALVES not full closed alarmed, RFW-TI-5 indicated a decreased RPV Inlet FW/T, Reactor Power Increased slightly, and MN GEN Elect Generation decreased slightly. Proper response on activation of the FWH 1A TUBE RUPTURE malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.30 REV. 0

TITLE: *RFW TURBINES HI VIBRATION*

OVERVI

This test was performed to demonstrate the functionality of the RFW TURBINES HI VIBRATION Malfunction. Turbine imbalance results in a high vibration condition. System responses included: RFW-T-1A VIBRATION increased to 2.2 as indicated on RFT-VBAM-1A, RFW-T-1B VIBRATION increased to 4.7 as indicated on RFT-VBAM-1B, and RFW-T-1B alarm TURB B VIB HIGH P840-A1-7.5 alarmed @2.5 mills. The severity of malfunction was increased. System responses included: RFT-T-1A VIBRATION increased to approx 4.5, RFW-T-1A alarm TURB A VIB HIGH P840-A1-7.1 alarmed @2.5 mills. Recorders for both the A and B turbines indicated increased viberation. Proper response on activation of the RFW TURBINES HI VIBRATION malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.31 REV. 0

TITLE: *5A FWH LOSS OF EXT STM*

OVERVIEW:

This test was performed to demonstrate the functionality of the 5A FWH LOSS OF EXT STM Malfunction. ES NR and DUMP VALVE LOGIC FAILURE initiates Loss of ES. System responses included: BS-V-5A and BS-V-4A indicated CLOSED, BS-DV-5A indicated open, STM DUMP valves not full closed P840-A2-9.6 alarmed, RPV INLET TEMP decreases on RFW-TI-5, APRMS A,B,C,D,E,&F indicate 1-2% pwr increase, Gen MW Output decreased on DEH Turbine Control LED, and 5A FWH Press decreased on BS-PI-5A. Proper response on activation of the 5A FWH LOSS OF EXT STM malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.32 REV. 0

TITLE: *6A FWH LOSS OF EXT STM*

OVERVIEW:

This test was performed to demonstrate the functionality of the 6A FWH LOSS OF EXT STM Malfunction. ES NR and DUMP VALVE LOGIC FAILURE initiates Loss of ES. System responses included: BS-V-7A and BS-V-6A indicated CLOSED, BS-DV-6A indicated open, STM DUMP valves not full closed P840-A2-9.6 alarmed, RPV INLET TEMP decreases on RFW-TI-5, APRMS A,B,C,D,E,&F indicate 1-2% pwr increase, Gen MW Output decreased on DEH Turbine Control LED, and 6A FWH Press decreased on BS-PI-6A. Proper response on activation of the 6A FWH LOSS OF EXT STM malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.33 REV. 0

TITLE: *RFW-LCV-10 CONTROLLER OUTPUT FAILS LOW*

OVERVIEW:

This test was performed to demonstrate the functionality of the RFW-LCV-10 CONTROLLER OUTPUT FAILS LOW Malfunction. RFW-LCV-10 CONTROLLER OUTPUT FAILS LOW. System responses included: RFW-LCV-10A/B shut, Flow indication on RFW-FI-604A/B and RFW-FR-607 decreased to zero, RPV/L indication on RFW-LI-606A,B,C decreased, RPV/L indication on RFW-LR-608 decreased, RPV Level High/Low alert alarmed, SU Valve DP increased on RFW-DPI-4, RFW Pump discharge press increased, RPV/L decreased to 13", and a Reactor SCRAM occurred. Proper response on activation of the RFW-LCV-10 CONTROLLER OUTPUT FAILS LOW malfunction was tested and verified

INITIAL CONDITIONS: IC-8, 21% Power, Ready for Synchronization

FINAL CONDITIONS: Reactor Scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.33A REV. 0

TITLE: *FWLC SU LEVEL CONTROL FAILS LOW*

OVERVIEW:

This test was performed to demonstrate the functionality of the FWLC SU LEVEL CONTROL FAILS LOW Malfunction. Internal Circuit Failure causes FWLC SU LEVEL CONTROL to fail low to minimum output. System responses included: RFW-LCV-10A/B shut, Flow indication on RFW-FI-604A/B and RFW-FR-607 decreased to zero, RPV/L indication on RFW-LI-606A,B,C decreased, RPV/L indication on RFW-LR-608 decreased, RPV Level High/Low alert alarmed, SU Valve DP increased on RFW-DPI-4, RFW Pump discharge press increased, RPV/L decreased to 13", and a Reactor SCRAM occurred. Proper response on activation of the FWLC SU LEVEL CONTROL FAILS LOW malfunction was tested and verified.

INITIAL CONDITIONS: IC-8, 21% Power, Ready for Synchronization

FINAL CONDITIONS: Reactor Scrammed

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.35 REV. 0

TITLE: *LOSS OF PRESS SUPPRESSION FUNCTION*

OVERVIEW:

This test was performed to demonstrate the functionality of the LOSS OF PRESS SUPPRESSION FUNCTION Malfunction. Loss of Primary Containment Press Suppression Function (Drywell Floor Failure) followed by a Main Steam Line Rupture. System responses included: Drywell and Wetwell Pressure increased concurrently, Drywell Pressure and Wetwell pressure tracked together and exceeded design pressure within a few minutes, appropriate annunciators alarmed, Drywell temperature exceeded 280 degrees in approximately 8 minutes, and Wetwell water temperature and level did not increase appreciably. Reactor Scrammed at less than 2 psig Drywell pressure. Proper response on activation of the LOSS OF PRESS SUPPRESSION FUNCTION malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor Scrammed.

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.36 REV. 0

TITLE: *RWCU LEAK IN EQUIPMENT AREA*

OVERVIEW:

This test was performed to demonstrate the functionality of the RWCU LEAK IN EQUIPMENT AREA Malfunction. Rupture in the RWCU piping between the F/D suction isolation valve (V-206B) and the F/D. System responses included: P603-A5-6-7 CLEANUP FILTER DEMIN FAILURE alarmed, RWCU-FI-620 RWCU DIFF. FLOW increased and then decreased, RWCU-FI-609 PUMP SUCTION increased and then decreased, RWCU-FI-605B FILTER DEMIN FLOW decreased to zero, and RWCU-FI- 605A FILTER DEMIN FLOW increased to approx 240 gpm. Proper response on activation of the RWCU LEAK IN EQUIPMENT AREA malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [x] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.37 REV. 0

TITLE: *HI HYDROGEN IN CONTAINMENT*

OVERVIEW:

This test was performed to demonstrate the functionality of the HI HYDROGEN IN CONTAINMENT Malfunction. Zerconium/water reaction is simulated to occur with resulting Hydrogen Production. System responses included: H2 increased to 8% on (CMS-H2R-1 and CMS-H2R-2) and HYDROGEN level HIGH P814-J1-2.2 and P814-J2-2.2 alarmed at 3.5%. Proper response on activation of the HI HYDROGEN in Containment malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.38 REV. 0

TITLE: *BKR S1 FAILURE TO AUTO CLOSE*

OVERVIEW:

This test was performed to demonstrate the functionality of the BKR S1 FAILURE TO AUTO CLOSE Malfunction. Failure of BUS S1 to Auto Close. Reactor was scrammed, system responses included: P800-C3-2.1 BKR N1-1 TRIP annunciated after Lockout Relays 86XU and 86XUOA tripped, BKR S1 did not close, Power was lost to SM-1, BKR-B-7 shut and supplied SM-7, DG-1 started but did not close onto SM-7 Proper response on activation of the BKR S1 Failure to Auto Close was tested and verified. NOTE: Loss of SM-1 is evaluated in 14.4.9.8.3B

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: Reactor is scrammed, SM-1 is de-energized

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.39 REV. 0

TITLE: *S2-1 DC GROUND*

OVERVIEW:

This test was performed to demonstrate the functionality of the S2-1 DC GROUND Malfunction. Simulates a zero resistance to ground on the bus due to water in a DC control panel. This results in a ground annunciator on the bus and deflection on the ground detector meter. The battery charger amps increased until at 600 AMPS the output fuse blew and the charger was lost. The ground then resulted in the battery output fuse blowing and a loss of the S2-1 bus. Motive Power was lost to the following loads: RCIC-V-(1, 4, 23, 13, 19, 22, 59, 45, 69), RHR-V-8, RCIC-P-(2, 4), TO-P-EOP, and RFT-EOP-(1A,1B). Proper response on activation of the S2-1 DC GROUND malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [X] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.40 REV. 0

TITLE: *RRC LOOP A HPU FUSE TH5 FAIL*

OVERVIEW:

This test was performed to demonstrate the functionality of the RRC LOOP A HPU FUSE TH5 FAIL Malfunction. Loss of fuse TH5 in RC1 causing spurious closure of HV Isolation Valves without isolation signal present. The following valves changed status from OPEN to CLOSED: HV-V-(17A, 18A, 19A, 20A, 33A, 34A, 35A, 36A). A manual attempt to reduce flow in RRC Loop A on Flow Controller RRC-M/A-611A did not cause RRC-FCV-60A to change position. Proper response on activation of the RRC LOOP A HPU FUSE TH5 FAIL malfunction was tested and verified.

INITIAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

FINAL CONDITIONS: IC-12 100% Power with Equilibrium Xenon

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [x] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [x] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

OPERATIONAL REVIEW SUMMARY

TEST CATEGORY: Malfunction Tests TEST No. 14.4.9.25.41 REV. 0

TITLE: *RRC-P-1B 60 Hz BREAKER FAILS TO TRIP*

OVERVIEW:

This test was performed to demonstrate the failing functionality of the RRC-P-1B Hz BREAKER FAILS TO TRIP Malfunction. BKR RPT 3B Failling to Trip when pump is started on 15 Hz. Pump was started IAW with PPM 2.2.1, sytem responses included: Pump started to 60 Hz, MG-1B started, CB-RPT-3B did not Trip when pump reached GE 95% of 60Hz speed, and CB-LF-2B did not close because CB-RPT-3B had not tripped. Forty seconds later RPT-3B, 4B and LF-1B Tripped due to an incomplete start sequence. RRC-P-1B speed and Loop and JP Flows delcayed back to reverse Flow Values. RRC-P-1B Incomplete Sequence Annunciators activated. Proper response on activation of the RRC-P-1B 60 Hz BREAKER FAILS TO TRIP malfunction was tested and verified.

INITIAL CONDITIONS: IC-8 39% Power Ready for 60 HZ

FINAL CONDITIONS: Power is reduced and Reactor is in Single Loop

SOURCE OF COMPARISON DATA:

- [ ] PLANT DATA SET _____
- [ ] ENGINEERING EVALUATION _____
- [ ] FSAR _____
- [ ] SOER / LER _____
- [X] OPERATIONAL ASSESSMENT

TEST RESULTS:

- [ ] TEST RESULTS UNSATISFACTORY WITH DISCREPANCIES
- [ ] TEST RESULTS SATISFACTORY WITH DISCREPANCIES
- [X] TEST RESULTS SATISFACTORY WITHOUT DISCREPANCIES

WNP-2 SIMULATOR CERTIFICATION

APPENDIX F
QUADRENNIAL TESTING

WNP-2 SIMULATOR CERTIFICATION
APPENDIX F
QUADRENNIAL TESTING

Year 1

1. Normal Plant Evolutions

   07.04.00.05.13 - Reactor Vx & Trip Valve Operability
   07.04.01.03.01.02 - Control Rod Exercise
   07.04.03.07.04.01 - Remote Shutdown Panel Channel Check
   07.04.04.07 - MSIV Closure Test
   07.04.05.01.11 - HPCS System Operability Test
   07.04.06.03.03 - Containment Isolation Valve Operability
   07.04.06.05.03.01 - Standby Gas Treatment Operability Test
   07.04.07.01.01.03 - HPCS Service Water Valve Position Verification
   07.04.07.09.01 - Weekly Bypass Valves Test
   07.04.08.01.01.02.06 - HPCS Diesel Generator - Loss of Power Test

2. Malfunction Tests

   14.4.9.18.3 - Instrument Line Break (Ref)
   14.4.9.25.14A - SRV-4C Simmering
   14.4.9.8.3B - Overcurrent SM-1
   14.4.9.8.7 - Loss of All Offsite Power
   14.4.9.24.56 - Battery Charger C1-1 Trip
   14.4.9.2.2 - Condenser Air Leak
   14.4.9.24.48A - COND-P-1A Trip
   14.4.9.21.1 - ADS Logic Failure
   14.4.9.3.1 - Rod Drift
   14.4.9.24.31 - Main Turbine Trip
   14.4.9.24.40 - BPV-1 Failure
   14.4.9.24.33 - Manual Scram
   14.4.9.21.5A - MS Rupture In Turbine Bldg.
   14.4.9.14.5 - IRM Failure - High
   14.4.9.9.4B - RCIC Turbine Trip (High Exh. Pressure)
   14.4.9.24.67C - RFW-L1-606B Fails High
   14.4.9.25.5 - RHR-P-2A Trip
   14.4.9.25.19 - RPS Spurious Scram A.
   14.4.9.24.63 - DEH Pump 1A Trip

Year 2

1. Normal Plant Evolutions

   14.4.7.2.1 - Startup from Hot Shutdown to Rated Pressure

   14.4.7.2.3 - SD to HSD

   14.4.6.1 - Shutdown Margin

   14.4.6.2 - Core Reactivity Coefficient Test

   07.04.00.05.15 - CIA Valve Operability

   07.04.01.04.02.01 - RSCS Operability Prior to Start-Up

   07.04.03.08.02.01 - Monthly Turbine Valve Tests

   07.04.05.01.04 - LPCI Flow Path Verification

   07.04.06.01.04.02 - MSIV Leakage Control System

   07.04.06.04.01.02 - Suppression Chamber-Dry Well Vacuum Breaker Operability

   07.04.06.05.03.04 - Standby Gas Treatment Manual Initiation Bypass Damper & Heater Test

2. Malfunction Tests

   14.4.9.18.6 - Instrument Line Break (Var)

   14.4.10.10 - MSIV ISOL with SRV FO

   14.4.9.8.4 - S1-2 DC Ground

   14.4.9.8.8 - DG-2 Trip High Diff. Current

   14.4.9.24.A - Loss of RHR SDC due to RHR-P-2B Trip

   14.4.9.24.64A - TSW Pump B Trip

   14.4.9.24.78 - ATWS/ARI Failure

   14.4.9.2.9 - RFPT B Trip

   14.4.9.3.2 - Stuck Rod

   14.4.9.3.6 - RDCS Failure

   14.4.9.13.1 - Main Generator Trip

   14.4.9.24.40A - BPV-2 Failure

   14.4.9.21.6 - RCIC Steam Line Break at Turbine

   14.4.9.14.8 - LPRM Failure - Downscale

   14.4.9.9.4C - RCIC Turbine Trip - (Mechanical Overspeed)

   14.4.9.3.12 - Hydraulic ATWS

   14.4.9.25.20 - RPS Spurious Scram B

Year 3

1. Normal Plant Evolutions

   14.4.6.5 - SRM/IRM vs. Control Rod Motion

   07.04.00.05.18 HPCS Service Water Operability/Demo

   07.04.03.01.01.22 - Manual SCRAM Function Test

   07.04.04.02.01.01 - Safety Relief Valve Acoustic Monitor CC

   07.04.05.01.05 - LPCS Valve Lineup/Ads Inhibit CFT

   07.04.06.01.04.02A - MSIV Valve Operability

   07.04.06.05.02.01 - Reactor Building Ventilation Isolation Valve Operability

   07.04.07.01.01.02 - Standby Service Water Loop B valve Position Verification

   07.04.08.01.01.01.02 - 18 Month Manual & Auto XFR Test, Start-Up to Backup Station Power

   07.04.08.01.01.02.11 - Diesel Generator #2 - Operability Test

2. Malfunction Tests

   14.4.9.24.27 - Main Steam Safety Relief Valve Fails Open

   14.4.9.4.4 - Leak Downstream Control Air Dryer

   14.4.9.24.15 - S1-1 DC Ground

   14.4.9.24.15A - S1-1 Trip

   14.4.9.24.34 - Recirculation Pump B Trip

   14.4.9.24.64 - TSW Pump A Trip

   14.4.9.24.5 - SW Pump A Trip

   14.4.9.2.9 - RFPT A Trip

   14.4.10.40 - Loss of Normal and Emergency FW

   14.4.9.24.80 - RPS Fails to SCRAM

   14.4.9.3.3 - Uncoupled Rod

   14.4.9.7.1 - Small Clad Fail

   14.4.9.23.3 - DEH Press Reg. Output Failure High

   14.4.9.24.40B - BPV-3 Failure

   14.4.9.2.8 - FW Rupture in Turbine Bldg

   14.4.9.14.1 - SRM A Failure - Low

   14.4.9.9.4A - RCIC Turbine Trip Due to RCIC-V-8 Closure

   14.4.9.24.43 - Annunciator Failure

   14.4.9.24.37A - HPCS-V-4 Fails to Open

   14.4.9.23.3 - DEH Press Reg. Output Failure High

Year 4

1. Normal Plant Evolutions

   14.4.7.2.1 - Startup from Hot Shutdown to Rated Pressure
   14.4.7.2.4 - S/U, S/D, Power OPS with 1 Recirc Pump
   07.04.00.05.06 - EDR, FDR, RRC, MS & RRC Valve Ops
   07.04.01.03.01.01 - Scram Discharge Volume Vent & Drain Valves Operability
   07.04.03.06.09 - SDV Bypass Rod Block
   07.04.05.01.06 - HPCS Valve Lineup
   07.04.06.02.02.01 - RHR Valve Position Verification
   07.04.08.01.01.02.01 - Diesel Generator #1 - Operability Test
   07.04.08.01.01.02.08 - HPCS Diesel Generator - LOCA Test
   07.04.08.01.01.02.12 - HPCS Diesel Generator - Operability Test

2. Malfunction Tests

   14.4.9.2.3 - Feed Line Break in DW
   14.4.9.25.14 - SRV's - Fail Closed
   14.4.9.8.3 - 4160 Vac Bus Sm-7 Overcurrent
   14.4.9.8.5 - 6900 Vac Bus SH-6 OL-GND
   14.4.9.24.18 - RPS B MC Set Trip
   14.4.10.6 - Trip of all Recirculation Pumps
   14.4.9.25.15 - RCC-P-1A - Trip
   14.4.9.24.73 - SW-V-2B Fails Closed
   14.4.9.24.2 - COND-P-2A Trip
   14.4.9.16.4 - HPCS Logic Failure
   14.4.9.24.80A - RPS Fails to SCRAM (AUTO)
   14.4.9.3.4 - Single Rod SCRAM
   14.4.9.7.2 - Gross Clad Fail
   14.4.9.23.3A - DEH Press Reg. Output Fails Low
   14.4.9.21.4A - MS Rupture in DW
   14.4.9.14.2 APRM Failure
   14.04.09.24.67B - RFW-L1-606B - Fails Low
   14.4.9.25.2 - RHR-P-2B Shaft Shear
   14.4.9.24.27 - Main Steam Safety Relief Valve Fails Open

NRC FORM 474
(1-90)
10 CFR 55.45(b),
55.4 and 55.5

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0138
EXPIRES: 9-30-92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 120 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0138), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

SIMULATION FACILITY CERTIFICATION

INSTRUCTIONS. This form is to be filed for initial certification, recertification (if required), and for any change to a simulation facility performance testing plan made after initial submittal of such a plan. Provide the following information, and check the appropriate box to indicate reason for submittal.

FACILITY: Nuclear Plant No. 2

DOCKET NUMBER: 50-397

LICENSEE: Washington Public Power Supply System

DATE: 6/24/92

This is to certify that:

1. The above named facility licensee is using a simulation facility consisting solely of a plant-referenced simulator that meets the requirements of 10 CFR 55.45.
2. Documentation is available for NRC review in accordance with 10 CFR 55.45(b).
3. This simulation facility meets the guidance contained in ANSI/ANS 3.5, 1985, as endorsed by NRC Regulatory Guide 1.149. If there are any exceptions to the certification of this item, check here [X] and describe fully on additional pages as necessary. See Section 6.-Compliance for Exceptions to ANS 3.5

NAME *(or other identification)* AND LOCATION OF SIMULATION FACILITY

Plant Support Facility
WNP2 - Hanford Reservation
Richland, WA. 99352

[X] SIMULATION FACILITY PERFORMANCE TEST ABSTRACTS ATTACHED. *(For performance tests conducted in the period ending with the date of this certification)*

DESCRIPTION OF PERFORMANCE TESTING COMPLETED *(Attach additional page(s) as necessary, and identify the item description being continued)*

See attached "Form 474 Supporting Documentation," Appendix D-Simulator Acceptance Tests and Appendix E-Additional Training Malfunction Tests

[X] SIMULATION FACILITY PERFORMANCE TESTING SCHEDULE ATTACHED. *(For the conduct of approximately 25% of performance tests per year for the four year period commencing with the date of this certification.)*

DESCRIPTION OF PERFORMANCE TESTING TO BE CONDUCTED. *(Attach additional page(s) as necessary, and identify the item description being continued)*

See attached "Form 474 Supporting Documentation" Section 5.3-Quadrennial Test Schedule and Appendix F-Quadrennial Testing

[ ] PERFORMANCE TESTING PLAN CHANGE. *(For any modification to a performance testing plan submitted on a previous certification)*

DESCRIPTION OF PERFORMANCE TESTING PLAN CHANGE *(Attach additional page(s) as necessary, and identify the item description being continued)*

Not Applicable

[ ] RECERTIFICATION *(Describe corrective actions taken, attach results of completed performance testing in accordance with 10 CFR § 55.45(b)(5)(v). Attach additional page(s) as necessary, and identify the item description being continued.)*

Not Applicable

Any false statement or omission in this document, including attachments, may be subject to civil and criminal sanctions. I certify under penalty of perjury that the information in this document and attachments is true and correct.

SIGNATURE – AUTHORIZED REPRESENTATIVE

TITLE: Deputy Managing Director

DATE: 6/24/92

In accordance with 10 CFR § 55.5, Communications, this form shall be submitted to the NRC as follows:

BY MAIL ADDRESSED TO: Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

BY DELIVERY IN PERSON TO THE NRC OFFICE AT: One White Flint North
11555 Rockville Pike
Rockville, MD